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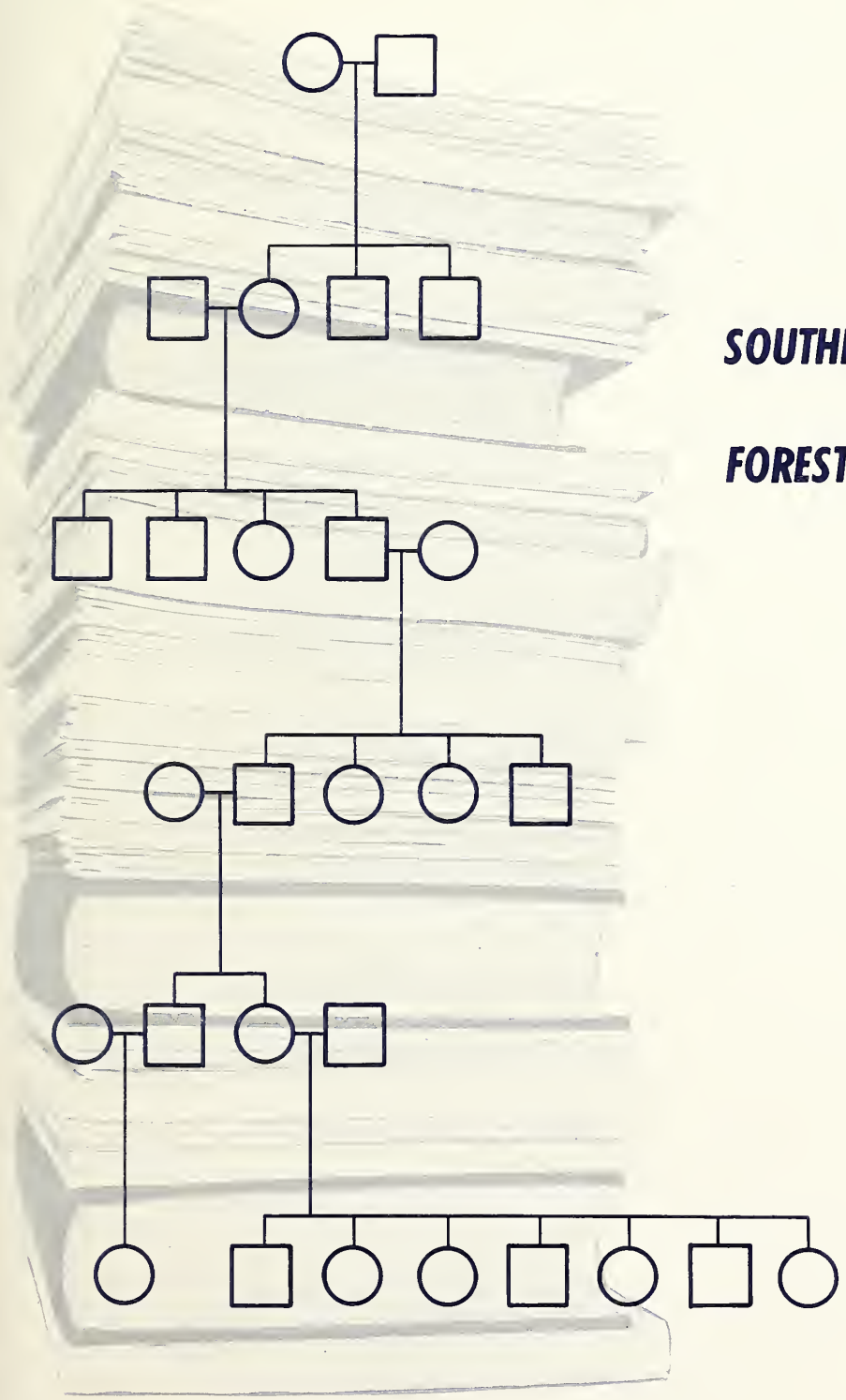
1961

FOREST GENETICS PUBLICATIONS



by the

SOUTHEASTERN and SOUTHERN

FOREST EXPERIMENT STATIONS

through 1961

Berch W. Henry
Keith W. Dorman
Philip C. Wakeley

SOUTHERN FOREST EXPERIMENT STATION
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FOREST GENETICS PUBLICATIONS BY THE SOUTHEASTERN AND SOUTHERN FOREST EXPERIMENT STATIONS THROUGH 1961

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Southern Forest Experiment Station

Keith W. Dorman
Southeastern Forest Experiment Station

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Southern Forest Experiment Station

The forest genetics and tree improvement programs of the Southeastern and Southern Forest Experiment Stations are closely coordinated and supplement or support each other at many points. Hitherto, however, the publications from them have been announced or listed separately by the issuing stations to separate mailing lists. As a result, many potential users of the genetics publications of both stations are acquainted with those of only one. The present unified list has been prepared to correct this situation.

The two stations published few genetics articles before 1940. During the 1940's there was a perceptible though still intermittent flow. After the middle 1950's the volume increased greatly as early long-time studies matured and new research programs got under way and began to yield results.

Most of the recent, and numbers of the earlier, releases and reprints are still available. Those marked SE may be requested from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina; and those marked SO, from the Southern Forest Experiment Station, T-10210 Federal Building, 701 Loyola Avenue, New Orleans 12, Louisiana.

This list is alphabetical by senior authors. An index of junior authors appears on page 27.

ALLEN, P. H.

1961. FLORIDA LONGLEAF PINE FAIL IN VIRGINIA. Jour. Forestry 59: 453-454. SE

After five years, longleaf of local (Virginia) origin survived better (90 percent) than that from Louisiana (87 percent), Mississippi (81 percent), Georgia (76 percent), and southern Florida (48 percent), but was significantly taller only than Florida stock (7.7 vs. 2.5 feet). Florida longleaf was severely injured by temperatures between 12 and 26° F.

1961. NATURAL SELECTION IN LOBLOLLY PINE STANDS. Jour. Forestry 59: 598-599. SE

On good sites in good seed years in the Virginia Coastal Plain a very large number of seedlings may become established, but only one of 60 seedlings may survive to maturity. Thus natural selection may be quite rigid for growth before artificial selection by forest tree breeders begins.

ALLEN, R. M.

1953. RELEASE AND FERTILIZATION STIMULATE LONGLEAF PINE CONE CROP. Jour. Forestry 51: 827. SO

In the third and fourth years after treatment, released and fertilized pines produced several times as many cones as untreated trees.

1953. STIMULATION OF LONGLEAF PINE SEED PRODUCTION. Second South. Forest Tree Impr. Conf. Proc. 1953, 3 pp. SO

Observations and designed studies in several places indicate substantial increases in cone production following release and some increase from fertilizing.

1960. CHANGES IN ACID GROWTH SUBSTANCES IN TERMINAL BUDS OF LONGLEAF PINE SAPLINGS DURING THE BREAKING OF WINTER DORMANCY. Physiologia Plant. 13: 555-558. SO

Greatest changes were an increase in a promoter that chromatographs similarly to indoleacetic acid in isopropanol: ammonia: water and a decrease of an inhibitor found at Rf 0.6-0.7 with the same solvent.

1960. POLE STEPS FOR CLIMBING TREES. Jour. Forestry 58: 563. SO

Telephone pole steps are useful on trees that are climbed repeatedly or are so far from roads that ladders must be carried considerable distances.

——— and COYNE, J. F.

1955. REDUCING LONGLEAF CONE LOSSES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 98, pp. 2-3. SO

Four sprayings with benzene hexachloride reduced loss of first-year cones from 68 percent to 26 percent.

——— and COYNE, J. F.

1956. INSECT PROBLEMS IN FOREST-TREE GENETICS. Jour. Forestry 54: 193. SO

At the Southern Institute of Forest Genetics, sprays of benzene hexachloride (BHC) have protected immature pine cones against troublesome insects.

——— and MCCOMB, A. L.

1956. ROOTING OF COTTONWOOD CUTTINGS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 151, 10 pp. SO

Rooting ability of cottonwood cuttings decreased as age of the cutting wood increased from 1 to 4 years. Indoleacetic acid or indole-n-butyric acid stimulated rooting but retarded top growth. The higher the soil-moisture level the better was survival and rooting.

——— and NAYLOR, A. W.

1960. STUDIES ON THE GROWTH SUBSTANCES IN LONGLEAF AND SLASH PINES. (Abstract.) Assoc. South. Agr. Workers Proc. 57: 251-252. SO

Four unidentified promoting substances and one unidentified inhibitor were detected. There appeared to be no striking qualitative differences which might explain the dwarf growth habit of longleaf seedlings.

——— and SCARBROUGH, N. M.

1961. FERTILIZER AND MULCH AID GRAFTING OF SLASH PINE. Jour. Forestry 59: 294. SO

The number of successful unions was more than doubled by fertilizer and tripled by a combination of fertilizer and pine needle mulch.

BARBER, J. C.

1953. TREE PLANTING AT THE BENT CREEK EXPERIMENTAL FOREST. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 27, 11 pp. SE

Survival and growth of experimental plantings, including the arboretum established in 1926.

1957. A VACUUM SOWING DEVICE FOR EXPERIMENTAL NURSERIES. Jour. Forestry 55: 907. SE

Device facilitates rapid sowing, with a precise count and spacing that permits germination estimates to be made from seedling counts.

Barber, J. C.
1959. THE GEORGIA SEED CERTIFICATION PROGRAM. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 84-86. SE
Work of Georgia Crop Improvement Association in improving quality of agricultural seeds and procedures for maintaining high purity and quality in seed of forest tree strains.

———
1961. GROWTH, CROWN FORM, AND FUSIFORM RUST RESISTANCE IN OPEN-POLLINATED SLASH PINE PROGENIES. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 97-104. SE
Significant differences between 8-year-old progenies were found for traits such as height, diameter, rust infection, stem crook, crown width, and natural pruning.

——— and Darby, S. P.
1959. GEORGIA'S SEED CERTIFICATION PROGRAM. Jour. Forestry 57: 125-126. SE
Development of and procedures for certification of forest tree seed by Georgia Crop Improvement Association.

——— and Darby, S. P.
1959. SEED HISTORY MADE IN GEORGIA. Amer. Forests 65(1): 38-40, 56. SE
See abstract immediately above.

——— and Dorman, K. W.
1957. SLASH PINE PROGENY TESTS INDICATE GENETIC VARIATION IN RESISTANCE TO RUST. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 104, 2 pp. *Also in* Fourth South. Forest Tree Impr. Conf. Proc. 1957: 44-46. SE
Progeny groups of certain maternal parents had only about half as many infected trees as did other groups.

——— and Reines, M.
1956. FOREST TREE IMPROVEMENT IN GEORGIA. Ga. Forest Res. Council Rpt. 1, 11 pp. SE
Status and progress of the Georgia Forest Tree Improvement Project.

——— and Stewart, D. M.
1957. VACUUM STORAGE OF POLLEN PROVES FEASIBLE. Univ. Minn. Minn. Forestry Notes 62, 2 pp. SE
Pollen of jack pine, white spruce, and Norway spruce can remain viable for at least one year when stored under vacuum with its coincident drying.

——— and VanHaverbeke, D. F.
1961. GROWTH OF OUTSTANDING NURSERY SEEDLINGS OF *Pinus elliottii* ENGELM. AND *Pinus taeda* L. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 126, 12 pp. SE
After 4 years, heights of about 400 slash and loblolly pine seedlings in Georgia, selected in nursery beds for vigor, were 16 and 19 percent, respectively, taller than a similar number of controls from the same beds. Rust infection, survival, and tree form were about the same for selected seedlings as for controls. The tallest seedlings were over 14 feet.

——— and Zobel, B. J.
1959. COMMENTS ON GENETIC VARIATION WITHIN GEOGRAPHIC ECOTYPES OF FOREST TREES AND ITS ROLE IN TREE IMPROVEMENT. Jour. Forestry 57: 439-441. SE
Describes factors in addition to clonal and one- or two-parent progeny tests that indicate intraspecific variation.

——— Dorman, K. W., and Jordan, R. A.
1955. SLASH PINE CROWN WIDTH DIFFERENCES APPEAR AT EARLY AGE IN 1-PARENT PROGENY TESTS. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 86, 2 pp. SE
Crown width of 3-year-old trees in 1-parent progeny tests shows strong correlation with crown width of mother tree. This holds true for both wide-crown and narrow-crown trees.

Bethune, J. E., and Roth, E. R.
1960. FIFTH YEAR RESULTS OF LOBLOLLY PINE SEED SOURCE PLANTING IN GEORGIA. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 145, 2 pp. SE
Seedlings of northern sources grew slower than those of southern origin. Infection by southern fusiform rust was related to seed origin but not to temperature zone.

——— and Roth, E. R.
1960. SOURCE OF SEED AFFECTS GROWTH OF LONGLEAF PINE—FIFTH YEAR RESULTS. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 146, 2 pp. SE
Seedling height, time in grass stage, percent of trees forked, and percent infected by brown spot needle blight, but not survival, exhibit significant differences.

Bourdeau, P. F., and Schopmeyer, C. S.
1958. OLEORESIN EXUDATION PRESSURE IN SLASH PINE: ITS MEASUREMENT, HERITABILITY AND RELATION TO OLEORESIN YIELD. The Physiology of Forest Trees, pp. 313-319. New York. SE
Oleoresin exudation pressure is shown to be a variable trait that has high heritability and influences oleoresin yield.

Bower, D. R., and Smith, J. L.
1961. partial girdling multiplies shortleaf cones. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 132, pp. 3-4. SO
Ouachita shortleaf seed trees tripled cone production the third year after treatment.

Campbell, T. E., and Wakeley, P. C.
1961. possible refinements in controlled pollination of southern pines. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 121-128. SO
Itemizes the "Placerville" stages of longleaf pine flowers for bagging, pollination, and debagging to attain certain degrees of seed set and of freedom from contamination, and evaluates laboratory germination of pollen in terms of fertilizing ability.

Campbell, W. A.
1959. littleleaf disease of shortleaf pine (*Pinus echinata* Mill.): present status and future needs. (Abstract.) Ninth Internatl. Bot. Cong. Proc. 2: 58-59. SE
Present research emphasizes soil improvement and selection and propagation of healthy shortleaf pines growing in severe littleleaf areas, and testing their progeny for resistance to the causal fungus Phytophthora cinnamomi.

Clapper, R. B.
1950. breeding new chestnuts for southern forests. Forest Farmer 9(11): 8. SE
History of the chestnut blight, search for resistance among Oriental chestnuts, USDA breeding and hybridizing program, and problems of mass-producing resistant chestnuts.

———
1952. breeding and establishing new trees resistant to disease. Econ. Bot. 6: 271-293. SE.
USDA program of selecting, breeding, and testing blight-resistant chestnuts.

———
1952. relative blight resistance of some chestnut species and hybrids. Jour. Forestry 50: 453-455. SE
Summarizes 25 years of selecting and breeding.

——— and Miller, J. M.
1949. breeding and selecting pest-resistant trees. U. S. Dept. Agr. Yearbook 1949: 465-471. SE
Attempts to breed for resistance to tree diseases and insects in the United States.

Committee on Southern Forest Tree Improvement. (C. E. Ostrom, Chairman)
1952. suggested projects in the genetic improvement of southern forest trees. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 20, 12 pp. SE
Projects are listed in: (1) application of genetics to the collection of seed for planting, (2) geographic source of seed for forest planting, (3) improvement of southern forest trees through selection and breeding, (4) techniques and basic aspects of forest genetics such as selection, anatomical studies, breeding, methods for control of flowering and fruiting, methods of vegetative propagation, and equipment for tree improvement work.

Coyne, J. F.
1957. control of cone insects in southern pine. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 64-66. SO
Chemicals may have to be used to prevent insects from chronically reducing the seed crop.

———
1957. mist blower for spraying seed trees. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 111, p. 2. SO
A turbine mist blower, mounted on and powered by a jeep, successfully and economically sprayed 70-foot pines with benzene hexachloride for protecting cones against insects.

Curry, J. R.
1943. selection, propagation, and breeding of high-yielding southern pines for naval stores production. Jour. Forestry 41: 686-687. SO
Efficiency in naval stores production has been decreasing and competition is stronger. Development of a high-yielding strain is advanced as a means of increasing tree yields and efficiency of labor. Work is progressing along three lines: (1) selection of superior trees, (2) vegetative propagation experiments, and (3) controlled breeding.

Demmon, E. L.
1938. the importance of forest-genetics investigations in the south. Cellulose Advisory Com. Perennial Crops, Natl. Farm Chemurg. Council, 4 pp. SO
Cites the few beginning experiments and observations made on southern species through 1937 and suggests a program of forest genetic studies to be carried out by the cellulose industry of the South.

Derr, H. J., and Dell, T. R.

1960. WHERE SHOULD WE GET SLASH PINE SEED FOR LOUISIANA? Forests and People 10(2): 30-31. SO

A plantation in central Louisiana contains slash pines from seed collected in South Carolina, Florida, and Georgia, as well as from southern Mississippi and eastern Louisiana. At age 22 years, trees from the various sources do not differ significantly in volume, size, or amount of cankering from southern fusiform rust.

——— and Enghardt, H.

1960. IS GEOGRAPHIC SEED SOURCE OF SLASH PINE IMPORTANT? South. Lumberman 201 (2513): 95-96. SO

After 22 years' growth in western Louisiana, slash pines from 7 geographic sources ranging from South Carolina to northern Florida and west to eastern Louisiana had developed no significant differences in height, diameter, volume, fusiform rust infection, or wood specific gravity.

Doolittle, W. T.

1953. GROWTH AND SURVIVAL OF HYBRID POPLARS. South. Lumberman 187(2345): 178-179. SE

Growth of 12 clones planted in 1935 indicates that certain hybrid poplars on good sites in the southern Appalachians grow faster than the most rapid-growing native species such as white pine, yellow-poplar, or northern red oaks.

Dorman, K. W.

1945. HIGH-YIELDING TURPENTINE ORCHARDS — A FUTURE POSSIBILITY. Chemurg. Digest 4: 293, 295-299. SE

Development of a high-producing strain is offered as a solution to many of the problems of the naval stores industry. Superior trees have been located, methods have been developed for vegetative propagation of slash pine, and controlled breeding with superior trees has been carried out. It is estimated that yields can be increased from the present average of 166 pounds per acre to 3,500 pounds by the use of superior trees grown in well-managed, fully-stocked stands.

———

1946. THE LIFE HISTORY OF SLASH PINE. Natl. Container Digest 2(10): 1, 4-5. SE

Development of female flowers, seeds, and slash pine trees for one life cycle is discussed.

———

1947. BETTER PINES FOR TURPENTINING. Amer. Forests 53: 498-500. SE

In the rubber industry production efficiency was greatly increased by the use of superior trees obtained by controlled breeding. On the other hand, the pine gum industry in America is suffering from decreasing efficiency. This article is a popular account of selection and breeding work, similar to that done with the rubber tree, designed to increase the efficiency of the gum industry by developing a strain of high-yielding trees which will greatly increase yields per acre with little additional labor.

———

1947. BREEDING BETTER SOUTHERN PINES FOR THE FUTURE. South. Lumberman 175(2201): 147-150. SE

A popular account of the work in tree selection, breeding, and vegetative propagation of southern pines. In a concluding section the author speculates on the gum yields possible from a plantation of cuttings from known superior trees. The greater gum yield of these trees and better stocking of the plantation could yield 24 times as much gum per acre as the present average acre of turpentine timber.

———

1947. LONGLEAF PINE CUTTINGS ROOTED IN GREENHOUSE. Jour. Forestry 45: 594. SE

Longleaf pine cuttings from large trees were rooted for the first time. The most effective treatment consisted of soaking the bases of the cuttings for 24 hours in a water solution containing 15 p.p.m. traumatic acid, 15 p.p.m. sodium pentachlorophenate, 10 p.p.m. vitamin B_1, 5 percent sucrose, and 0.4 percent of a commercial plant food.

———

1947. PEDIGREED PINES FOR DIXIE'S FUTURE FORESTS. Forest Farmer 6(8): 7. SE

An outline of work already begun for producing a better pine for southern forests. This includes selection of superior breeding stock, vegetative propagation to preserve the valuable traits of the stock, controlled breeding and further selection to combine the desirable characteristics of two or more trees into one tree or to increase some desirable characteristic, and the checking of performance of the progeny.

DORMAN, K. W.

1947. PROGRESS IN BREEDING BETTER TURPENTINE PINES. AT-FA Jour. 9(12): 10, 15. SE

The controlled-breeding work of 1943 and 1944 with slash pine resulted in enough seed to produce 600 seedlings. These were set out in a plantation in 1946. Each of these seedlings has a carefully recorded pedigree. The plantation includes crosses of high-yielding turpentine pines, average-yielding trees, and some slash-loblolly and slash-longleaf hybrids. When the seedlings are large enough, the gum-yielding capacity of the different groups will be compared by small-scale chipping methods.

1947. ROOTED PINE CUTTINGS MAKE RAPID GROWTH. AT-FA Jour. 9(11): 8. SE

Slash pine cuttings rooted in the greenhouse and then planted in the field grow rapidly. Within 3 or 4 years from the parent tree they grow to be 6 feet or more in height.

1950. THE GENETICS OF SOUTHERN PINES (A PRELIMINARY REPORT). U. S. Forest Serv. Southeast. Forest Expt. Sta., 52 pp. SE

Phytogeny of gymnosperms, classification of pines, mechanism of pollination, development of the seed, controlled-breeding methods, and variation in wild stands.

1951. HYBRIDIZATION IN IMPROVING SOUTHERN PINE. First South. Forest Tree Impr. Conf. Proc. 1951, 10 pp. SE

Résumé of interspecific hybridization with non-southern and a few southern pines, and a discussion of both inter- and intraspecific hybridization of southern pines, including slash pine in Australia. Brief notes on induced mutation, and comprehensive suggestions for tree improvement programs in the South.

1951. WE NEED BETTER SEED COLLECTING EQUIPMENT. U. S. Forest Serv. Tree Planters' Notes 5, p. 2. SE

The need for improved equipment for tree climbing and cone picking.

1952. DIRECTORY OF FOREST GENETICS ACTIVITIES IN THE SOUTH. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 17, 17 pp. SE

Lists by administrative agency work now under way in tree introduction, racial variation, selection and hybridization, vegetative propagation, cytology, and stimulation of seed production.

1952. HEREDITARY VARIATION AS THE BASIS FOR SELECTING SUPERIOR FOREST TREES. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 15, 88 pp. SE

A comprehensive discussion of the basis for heritable variation and selection in tree improvement and silviculture.

1953. A TAXONOMIC STUDY OF SLASH PINE. (Abstract.) Assoc. South. Agr. Workers Proc. 50: 116-117. SE

Slash pine, one of the most valuable southern pines, is a distinct species from Caribbean pine, with which it has usually been united. The related pine of southern Florida is now recognized as a botanical variety.

1955. PROGRESS IN TREE IMPROVEMENT RESEARCH AT THE SOUTHEASTERN FOREST EXPERIMENT STATION. Second Lake States Forest Tree Impr. Conf. Proc. 1955: 28-33. U. S. Forest Serv. Lake States Forest Expt. Sta. Misc. Rpt. 40, 108 pp. SE

The Station's research centers have verified some inheritance of gum yield, developed techniques for vegetative propagation, and demonstrated mother-tree heritability of crown form, growth rate, and rust resistance in pines.

1955. SHORT-TIME AND LONG-TIME POSSIBILITIES OF SELECTION IN FOREST TREES. Third South. Forest Tree Impr. Conf. Proc. 1955: 31-35. SE

Selection of improved tree types should be based on results of studies of inherent variation within each species. Many economically important plant varieties have been obtained by selection, but the process does not create new types—it merely isolates those occurring naturally.

1955. VEGETATIVE PROPAGATION PROBLEMS IN THE SOUTH. Second Lake States Forest Tree Impr. Conf. Proc. 1955: 56-57. U. S. Forest Serv. Lake States Forest Expt. Sta. Misc. Rpt. 40, 108 pp. SE

". . . Much has been accomplished in developing vegetative propagation methods to meet the needs in tree improvement research. Many problems remain, but our current research is strong, and it should not be long until the major ones will be solved."

Dorman, K. W.

1956. genetics in relation to forest management. Ia. State Col. School Forestry, Ames Forester 43: 17-19. SE

Knowledge of variation and heredity in trees can be applied whenever new stands are established and when intermediate cuts are made.

1956. procress in the selection of superior strains of southern pines. (Abstract.) Assoc. South. Agr. Workers Proc. 53: 151-152. SE

Variations in growth rate, fusiform rust infection, and crown width among progeny of superior mother trees indicate that important traits are strongly inherited and selection of superior types is possible.

1956. publications on forest genetics, southeastern forest experiment station. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 63, 18 pp. SE

Annotated list, 1939 through 1955.

1957. breeding better pines. South. Planter 118(11): 20. SE

Describes progress of cooperative research in the South.

1959. forest genetics and tree improvement research at the southeastern forest experiment station. Sixth Meeting Com. Forest Tree Breeding Canada Proc. 1958. Pt. 2: Q1-Q2. SE

Outlines the program in applied tree breeding through racial selection, single tree selection, and intraspecific hybridization.

1959. the status of work on wood quality in southern forest tree improvement research. Sixth Meeting Com. Forest Tree Breeding Canada Proc. 1958. Pt. 2: S1-S15. SE

Recent work in wood specific gravity, tracheid length, and cellulose content on the basis of correlation of mature with juvenile traits, correlation of branchwood with stemwood, and variation and inheritance.

1961. selection as a method of tree breeding. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 65-72. SE

Though much research on variation and inheritance within southern tree species is still needed, utilization of the inherent variation in these species seems to promise more rapid progress in tree breeding than does species introduction or hybridization.

--- and Barber, J. C.

1956. time of flowering and seed ripening in southern pines. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 72, 15 pp. SE

Approximate dates of pollen and seed ripening for slash, longleaf, loblolly, and shortleaf pines for many locations throughout the natural ranges of the species; similar data for minor southern pines and the pines of the Appalachian Mountains.

--- Bauer, E., and Greene, J. T.

1953. tree improvement makes a step ahead. South. Lumberman 187 (2345): 170-171. SE

History and progress of the tree improvement program at the Ida Cason Callaway Foundation, Hamilton, Georgia. Reports variation in vigor of open-pollinated progeny of slash and loblolly pine maternal parents.

--- Schopmeyer, C. S., and Snow, A. G., Jr.

1944. top bracing and guying in the breeding of southern pines. Jour Forestry 42: 140-141. SO

Breeding or other work in the tops of slash and longleaf pine can be made safer and easier by reinforcing the upper part of the central stem with 2- by 2-inch splints and by the use of three guy wires from the top of the tree to the ground.

Downs, A. A.

1948. how pine cuttings are rooted. Forest Farmer 7(5): 26. SE

Important factors in rooting cuttings of slash and longleaf pine are treatment with a growth regulator, such as traumatic acid, and a carefully controlled environment. Cuttings must be sprayed intermittently with water during the daylight hours to prevent desiccation.

Downs, A. A.

1949. DEVELOPING BETTER PINES FOR GUM PRODUCTION. South. Lumberman 179(2249): 233-236. SE

Accomplishments of 8 years' work by the Lake City Branch of the Southeastern Forest Experiment Station toward the development of a high-yielding strain of naval stores pine are reported. A dozen trees have been found which produce at least twice as much gum as the average of the trees around them. One progeny test plantation of 600 trees is now 4 years old, and 800 one-year-old seedlings are available to establish another progeny test plantation. Methods of rooting pine cuttings have been developed. For trees of working size, 5 to 20 percent of the cuttings root. Cuttings from very young trees root more easily.

1949. LOW FORKING IN WHITE OAK SPROUTS MAY BE HEREDITARY. Jour. Forestry 47: 736. SE

In 30 clumps of sprouts in a 25-year-old stand in the Piedmont of Virginia in which the largest stem was forked, 53 percent of the next largest stems were also forked. In 102 clumps in which the largest stem was straight, all but 4 percent of the next largest stems were also straight. A chi-square test of the ratios showed that this difference was significant. Only stems definitely forked below 24 feet were classed as forked; all others were classed as straight or not forked.

1949. UNUSUAL TREE APPEARS IN BREEDING TESTS. Forest Farmer 9(2): 8. SE

During a dry period the needles of one tree in a slash pine gum-yield progeny test develop alternating rings of bright yellow and dull green. From a distance, this 4-year-old appears bright yellow. In drought periods the surrounding trees turn a uniform dull yellowish green. The unusual tree appears in no danger of dying. When a drought ends, the tree gradually regains a healthy green color.

Duffield, J. W., and Snyder, E. B.

1958. BENEFITS FROM HYBRIDIZING AMERICAN FOREST TREE SPECIES. Jour. Forestry 56: 809-815. SO

Reviews American work and concludes that, while successes have not yet been remarkable, hybridization has an important place among methods of improving adaptability and pest-resistance.

Echols, R. M.

1955. LINEAR RELATION OF FIBRILLAR ANGLE TO TRACHEID LENGTH, AND GENETIC CONTROL OF TRACHEID LENGTH IN SLASH PINE. Tropical Woods 102: 11-22. SE

Fibrillar angle bears a direct linear relation to tracheid angle, which appears to be under rigid genetic control.

1959. ESTIMATION OF PULP YIELD AND QUALITY OF LIVING TREES FROM PAIRED-CORE SAMPLES. TAPPI 42: 875-877. SO

To reduce the effect of variation from causes such as eccentricity and compression wood, pairs of samples for specific gravity and ring width are taken from opposite sides of trees, and include all growth rings. To derive wood quality index values, measurements are converted to estimated pulp yield.

1959. EVALUATING TREES AND STANDS FROM LARGE INCREMENT CORES. Soc. Amer. Foresters Proc. 1958: 145-147. SO

The Southern Institute of Forest Genetics is using 10-millimeter increment cores to study factors that influence wood quality.

1959. THE AMPLISCOPE—AN INSTRUMENT FOR WOOD-FIBER MEASUREMENTS. Jour Forestry 57: 43-44. SO

Construction details of a device for throwing a magnified image of small objects on a glass screen.

1960. EFFECTS OF GROWING SPACE ON WOOD SPECIFIC GRAVITY IN LOBLOLLY PINE. Soc. Amer. Foresters Proc. 1959: 140-143. SO

Trees were planted in central Louisiana at square spacings of 4, 6, 8, and 10 feet, thinned to 4 densities at age 20 years, and remeasured ten years later. For all degrees of thinning, trees at 6-foot spacing made the greatest gain in specific gravity between ages 20 and 30. The 8-foot spacing produced the most volume.

1960. THE IMPACT OF FOREST GENETICS ON FOREST UTILIZATION. (Abstract.) Assoc. South. Agr. Workers Proc. 57: 138-139. SO

Present results in forest genetics promise "The ultimate development of strains of trees with increased utilization values for sawlogs, poles, pilings, pulpwood, and other products . . . ."

ECHOLS, R. M.

1961. LIQUID DISPERSION METHOD FOR MOUNTING WOOD FIBERS ON SLIDES. Forest Sci. 7: 369-370. SO

Slides are placed in a container filled with water (or xylene for dehydrated material). Macerated and stained fibers are stirred into the liquid and allowed to settle in an even layer. The liquid is drained off very slowly, the slides lifted out, and cover slips mounted.

———— and BOWDEN, A. B.

1961. INEXPENSIVE RING ANALYZER FOR CUMULATIVE SUMMERWOOD MEASUREMENTS. Forest Sci. 7: 147-148. SO

A wooden holder, moving on threaded rods, for positioning increment cores under a microscope.

———— and MERGEN, F.

1955. HOW TO EXTRACT LARGE WOOD SAMPLES FROM LIVING TREES. Jour. Forestry 53: 136. SE

Successful method was to bore two holes to pith, insert flat-sided plugs as saw guides, saw between holes, and then chisel out the sample.

EVANS, T. C., BARBER, J. C., and SQUILLACE, A. E.

1961. SOME STATISTICAL ASPECTS OF PROGENY TESTING. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 73-79. SE

Before experimental designs can be precise, tree breeders must decide what differences are meaningful. In 10-year-old slash pine, coefficients of variation tend to become stable at about 20 trees per plot for height, diameter, bark thickness, and clear length. A 25-tree-plot might be reasonable.

FREESE, F.

1953. SILVICULTURAL IMPLICATIONS OF PRESENT UTILIZATION IN NORTH-CENTRAL ALABAMA. Jour. Ala. Acad. Sci. 23: 42-44. SO

Present wood utilization practices in north-central Alabama favor the application of the principles of genetics to the practice of forestry.

GEMMER, E. W.

1931. A WORD FOR EXOTICS. Jour. Forestry 29: 92-94. SO

Exotics, especially their possibilities on poor sites, deserve intensive study.

GODDARD, R. E., and ALLEN, R. M.

1955. CONTROLLED POLLINATION TECHNIQUES. Third South. Forest Tree Impr. Conf. Proc. 1955: 67-70. SO

Resumé of currently employed pollination techniques with southern pines.

GRANO, C. X.

1960. STRANGLING AND GIRDLING EFFECTS ON CONE PRODUCTION AND GROWTH OF LOBLOLLY PINE. Jour. Forestry 58: 897-898. SO

Cone production was neither promoted nor hindered. Diameter and height growth were unimpaired. The trees were 3 to 15 inches in d.b.h. and showed no sign of having borne cones previously.

GREENE, J. T., DORMAN, K. W., and BAUER, E.

1957. DIFFERENTIAL GROWTH RATE OF YOUNG PROGENY OF INDIVIDUAL SLASH PINE TREES. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 47-50. SE

Demonstrates growth differences in progeny of different mother trees and indicates that the relationship between seed size and seedling growth is not strong when seed is kept separate by maternal parent.

GRIGSBY, H. C.

1959. TWO PROMISING PINE HYBRIDS FOR THE MID-SOUTH. South. Lumberman 198(2466): 32-33. SO

At Crossett, Arkansas, the cross of slash and shortleaf pine is showing resistance to tipmoth and is growing faster than shortleaf pine. The hybrid of loblolly and south Florida slash pine is also doing well.

GRUSCHOW, G. F.

1956. CURLY-PINE. South. Lumberman 193 (2417): 189-190. SE

Twenty-seven percent of the lumber cut from a 180-year-old shortleaf pine tree in the Bigwoods Experimental Forest had the rare and highly prized curly grain.

HARGREAVES, L. A., JR., and DORMAN, K. W.

1955. GEORGIA STARTS PINE SEED ORCHARDS. South. Lumberman 191(2393): 189. SE

Scions of superior phenotypes in loblolly and slash pine will be grafted on run-of-the-mill seedlings in establishing 500 acres of seed orchards.

———— and DORMAN, K. W.

1957. ADMINISTRATIVE AND TECHNICAL ASPECTS OF ESTABLISHING PINE SEED ORCHARDS. Soc. Amer. Foresters Proc. 1956: 92, 93. SE

Procedures and costs of establishing three orchards in Georgia.

HARRINGTON, T. A.

1953. HYBRID PINES FAIL TO GROW AS WELL AS SHORTLEAF, LOBLOLLY. Miss. Farm. Res. 16(4): 8. SO

Preliminary study utilizing hybrids produced in the arboretum at Placerville, California.

HENRY, B. W.

1955. SOUTHERN INSTITUTE OF FOREST GENETICS. Third South. Forest Tree Impr. Conf. Proc. 1955: 99-101. SO

Objectives and plans of the newly established Institute.

1955. THE TECHNIQUES OF TESTING FOR INSECT AND DISEASE RESISTANCE IN FOREST TREES. Second Lake States Forest Tree Impr. Conf. Proc. 1955: 85-87. U. S. Forest Serv. Lake States Forest Expt. Sta. Misc. Rpt. 40, 108 pp. . SO

Purposes and general methods of testing for pest resistance.

1956. PROGRESS AT INSTITUTE OF FOREST GENETICS. Forest Farmer 16(3): 4-5, 18. SO

In 2 years, the Southern Institute of Forest Genetics has initiated or intensified more than 50 studies in 4 main categories: 1.—Variation between and within genetic groups or populations of pines. 2.—Mode or mechanism by which characters are inherited. 3.—Identification, preservation, and development of desirable plant material. 4.—Facilitating tchniques.

1957. BETTERING NATURE'S BEST. Forest Farmer 17(2): 10-11. SO

"Blessed with four native pine species that rank with the best in the world, are we a bit presumptuous to think that we can make them still better? Not at all. On the contrary, it is practically a sure bet . . . . Through selection and hybridization, differentiating genetic from environmental effects, and studying the physiology of the resultant tree, the Southern Institute of Forest Genetics, along with other research organizations, is embarked on a program to 'better the best'."

1959. DISEASES AND INSECTS IN THE SOUTHWIDE PINE SEED SOURCE STUDY PLANTATIONS DURING THE FIRST FIVE YEARS. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 12-17. SO

Two pests have been of major importance. "Tip-moth injury was and is severe in most of the shortleaf and loblolly plantations, irrespective of seed source, and most certainly is impeding height growth. Fusiform rust is variable in intensity among the slash and loblolly plantations . . . . Incidence consistently showed significant differences between seed sources in the loblolly pine plantings, but in only one case with slash pine."

——— and BERCAW, T. E.

1956. SHORTLEAF-LOBLOLLY HYBRID PINES FREE OF FUSIFORM RUST AFTER 5 YEARS' EXPOSURE. Jour. Forestry 54: 779. SO

Five years after planting, none of the 31 surviving seedlings of the hybrid Pinus echinata *Mill.* × P. taeda *L. had symptoms of the rust, while 67 percent of some adjacent slash pine seedings* (P. elliottii elliottii *(Engelm.) Little and Dorman) had typical fusiform cankers.*

——— and COYNE, J. F.

1955. OCCURRENCE OF PESTS IN SOUTHWIDE PINE SEED SOURCE STUDY. Third South. Forest Tree Impr. Conf. Proc. 1955: 49-54. SO

Occurrence of fusiform rust, tip moth, and webworm by geographic sources of loblolly and slash pine in two-year-old plantations.

——— and HEPTING, G. H.

1957. PEST OCCURRENCES IN 35 OF THE SOUTHWIDE PINE SEED SOURCE STUDY PLANTATIONS DURING THE FIRST THREE YEARS. U. S. Forest Serv. South. Forest Expt. Sta., 7 pp. SE-SO

Drouth has caused most of the mortality so far. Fusiform rust is building up rapidly and may be expected to damage loblolly and slash pine plantings. The Nantucket tip moth is widespread in loblolly and shortleaf plantings, and may be retarding height growth appreciably. Brown-spot needle disease is being controlled in longleaf plantations with fungicides, but it and Hypoderma needle blight may be causing growth loss on loblolly. No other pests yet appear serious.

HEPTING, G. H.

1954. GUM FLOW AND PITCH SOAK IN VIRGINIA PINE FOLLOWING FUSARIUM INOCULATION. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 40, 9 pp. SE

Describes gum yields and amount of pitch-soaking in Virginia pine following inoculations with the pitch canker fungus.

1955. LITTLELEAF. The Unit, News Letter 58, pp. 74-75. SE

Status of littleleaf and research on control through genetics and soil management. Forest management in littleleaf areas is discussed.

HEPTING, G. H., and TOOLE, E. R.
1948. WILT EPIDEMIOLOGY AND RESISTANCE IN THE MIMOSA TREE. (Abstract.) Phytopath. 38: 13. SE
The wilt has spread from Maryland to Florida in the 12 years since it was discovered in North Carolina. Occasional seedlings have resisted the wilt following several severe inoculations. Twenty-eight resistant clones are now available. Cuttings from these are also highly resistant.

HESSELTINE, C. W., and SNYDER, E. B.
1958. ATTEMPTS TO FREEZE-DRY PINE POLLEN FOR PROLONGED STORAGE. Bul. Torrey Bot. Club 85: 134-135. SO
Lyophilization techniques by which fungus spores have been stored successfully for 15 years failed with longleaf pine pollen.

HOEKSTRA, P. E.
1954. NEW BLOOD FOR SOUTHERN PINES. South. Lumberman 189 (2369): 182-183. SE
Nonindigenous species and varieties of pine are being established in Florida to furnish material for tree improvement.

———
1957. AIR-LAYERING OF SLASH PINE. Forest Sci. 3: 344-349. SE
Results were better in July than in September. Increased rooting followed an increase from 0.4 to 0.8 to 1.2 percent concentration of indolebutyric acid. A 1.2-percent concentration of naphthaleneacetic acid was not effective.

———
1957. STIMULATION OF FLOWER AND SEED PRODUCTION IN SLASH PINE. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 74-75. SE
Root pruning, partial girdling, and fertilization induced 6-year-old saplings to flower. The high nitrogen content of a 7-7-7 fertilizer was more effective than the high phosphorus content of a 3-18-6 fertilizer.

——— and JOHANSEN, R. W.
1957. GROWTH OF PLANTED SLASH PINE AIR-LAYERS. Jour. Forestry 55: 146. SE
During the first year after outplanting air-layers from 6-year-old saplings grew three and one-half times as much as did air-layers from 23-year-old trees.

——— and MERGEN, F.
1957. EXPERIMENTAL INDUCTION OF FEMALE FLOWERS ON YOUNG SLASH PINE. Jour. Forestry 55: 827-831. SE
On 7-year-old trees root pruning, partial girdling, strangulation, and application of 5 pounds of 3-12-6 fertilizer per tree increased the number of trees bearing female flowers. On 21-year-old trees partial girdling, 20 pounds of 7-7-7 fertilizer, and 40 pounds of 3-18-6 fertilizer were effective.

HUCKENPAHLER, B. J.
1953. SOURCE OF SEED AFFECTS PINE SURVIVAL AND GROWTH. Miss. Farm Res. 16(6): 6. SO
In Lafayette County, Mississippi, marked differences in survival and height growth among loblolly pine seedlings from 8 geographic seed sources are apparent after only 3 growing seasons.

———
1955. AUXINS FAIL TO STIMULATE ROOTING OF YELLOW-POPLAR CUTTINGS. Bot. Gaz. 117: 73-75. SO
The auxins were indolebutyric acid, indoleacetic acid, and naphthaleneacetic acid, all applied in a variety of concentrations and immersion periods to cuttings made at several seasons from wood of various ages.

JACKSON, L. W. R., and ZAK, B.
1949. GRAFTING METHODS USED IN STUDIES OF THE LITTLELEAF DISEASE OF SHORTLEAF PINE. Jour. Forestry 47: 904-908. SE
In transmission experiments with littleleaf disease both the aboveground parts and the roots of shortleaf pines were successfully grafted with seedlings, saplings, and adult trees serving as stock trees. The bark-patch method proved highly successful. The approach grafting method, although not quite so successful as the first method, nevertheless gave a fair percentage of graft unions for both stems and roots. Thus far, healthy trees receiving the grafts have not developed symptoms of the disease.

JEWELL, F. F.
1957. INOCULATION OF SEEDLINGS OF *Pinus elliottii* var. *elliottii* WITH *Cronartium fusiforme*. Phytopath. 47: 18. SO
Inoculation caused red needle spots and subsequent gall formation.

———
1957. INOCULATION TECHNIQUES IN STUDIES OF RUST RESISTANCE. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 67-69. SO
Exploratory studies indicate that a satisfactory technique can be developed for testing rust resistance in the southern pines.

JEWELL, F. F.

1957. PREVENTING CONE RUST ON SLASH PINE BY POLLINATION TECHNIQUES USED IN BREEDING PROGRAMS. Phytopath. 47: 241-242. SO

Rust infection of first-year cones of slash pine was prevented by routine bagging of the conelets for controlled pollination; 27 percent of the non-bagged cones became infected. Infection of slash pine cones seems to coincide with the period of pollination.

1958. SOFTENING SLASH PINE TISSUES FOR SERIAL SECTIONING. Stain Technol. 33: 191-192. SO

A 10-percent aqueous solution of glycerol was found best for softening serial paraffin sections for anatomical studies of rust-infected slash pine.

1958. STAIN TECHNIQUE FOR RAPID DIAGNOSIS OF RUST IN SOUTHERN PINES. Forest Sci. 4: 42-44. SO

Two techniques, involving orseillin-BB and aniline blue, and safranin-O and aniline blue, have been used successfully for distinguishing the mycelium of Cronartium fusiforme *in hand sections of slash and loblolly pines and of* C. cerebrum *in shortleaf pine.*

1959. DISEASE RESISTANCE STUDIES IN TREE IMPROVEMENT RESEARCH. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 18-20. SO

"The ultimate aim of disease resistance research is to be able to incorporate the factors for resistance . . . into trees possessing other superior traits as well."

1960. INOCULATION OF SLASH PINE SEEDLINGS WITH *Cronartium fusiforme*. Phytopath. 50: 48-51. SO

Cotyledonary seedlings were inoculated by placing telia-bearing oak leaves over them and maintaining high humidity for 72 hours. One-year-old seedlings were inoculated by wrapping the new growth in telia-bearing oak leaves and maintaining high humidity, and also by inserting telia into new stem tissue.

1961. ARTIFICIAL TESTING OF INTRA- AND INTERSPECIES SOUTHERN PINE HYBRIDS FOR RUST RESISTANCE. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 105-109. SO

Crossing slash or loblolly with shortleaf will not consistently yield resistant progenies. Resistance in shortleaf hybrids appears more complicated than inheritance of a simple dominant factor.

1961. INFECTION OF ARTIFICALLY INOCULATED SHORTLEAF PINE HYBRIDS WITH FUSIFORM RUST. U. S. Dept. Agr. Plant Dis. Rptr. 45:639-640. SO

Characteristic rust galls developed on at least a few progenies from each of five crosses of shortleaf × slash pine and one cross of shortleaf × loblolly. Differences in number of galled individuals from the various crosses appeared traceable to particular shortleaf parents.

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and HENRY, B. W.

1959. BREEDING FOR RESISTANCE TO SOUTHERN FUSIFORM RUST. (Abstract.) Ninth Internatl. Bot. Cong. Proc. 2: 181-182. SO

Data so far appear to justify initial hypotheses on possible sources of resistance, i. e., natural resistance in susceptible pine species and inherited resistance in hybrid progenies having shortleaf as a parent. The resistance of shortleaf appears to be transmitted as a dominant factor to the F_1 hybrids from crosses of shortleaf × slash and shortleaf × loblolly.

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and HENRY, B. W.

1961. BREEDING FOR RESISTANCE TO SOUTHERN FUSIFORM RUST. Recent Advances in Botany, pp. 1694-1695. Toronto. SO

Text of paper read in 1959 by same authors and under same title; see entry above.

JOHANSEN, R. W.

1957. WHAT WE KNOW ABOUT AIR-LAYERING. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 126-131. SE

Summarizes experiences in air-layering, with particular reference to the effects of tree age and use of growth regulators on slash, loblolly, and shortleaf pine.

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and ARLINE, L.

1958. AN IDEA IN TRUCK-MOUNTED LADDERS. Jour. Forestry 56: 852-853. SE

Description of truck-mounted ladder for use in seed orchards and seed production areas.

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and KRAUS, J. F.

1958. PROPAGATION TECHNIQUES APPLICABLE TO LONGLEAF PINE. Jour. Forestry 56: 664. SE

Longleaf pine can be vegetatively propagated by cuttings, grafting, and air-layers, with the same techniques that are used for other southern pines.

Johansen, R. W., and Kraus, J. F.
1959. FERTILIZING CLEFT AND BOTTLE GRAFT SCIONS IN AN ATTEMPT TO INCREASE GRAFT UNIONS. Jour. Forestry 57: 511, 514. SE
Scion-fertilization treatments in the concentrations used did not benefit the grafts.

Kormanik, P. P., Haney, G. P., and Dorman, K. W.
1961. LOBLOLLY PINE OF NORTHERN PROVENANCE MAY BE BEST FOR PLANTING IN VIRGINIA. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 157, 2 pp. SE
After 15 years, height of loblolly pine of North Carolina origin was 37 feet as compared with 35 feet for South Carolina and 34 feet for Mississippi and Arkansas stocks. Average volume was 2.40, 1.96, and 1.90 cubic feet per tree, respectively. Stem form was very poor; only 8 to 20 percent would make good trees. Fifteen percent of the Arkansas stock had complete forking, as compared with 6 percent or less for the others.

Kraus, J. F.
1958. TWENTY NON-INDIGENOUS PINES GROW IN NORTH FLORIDA. Silvae Genetica 7: 69. SE
Lists three Asiatic, five European, and twelve North American pines growing in the arboretum on the Olustee Experimental Forest.

———
1960. TREE IMPROVEMENT RESEARCH AT LAKE CITY, FLORIDA. N. Y. State Ranger School Alumni News 1959: 22-27. SE
Tree improvement work at Lake City Research Center.

——— and Thomas, L. T.
1961. RESULTS OF TRIALS OF MODIFIED ACRYLIC POLYMERS IN GRAFTING SLASH PINE. Jour. Forestry 59: 451. SE
With scions from trees 11 to 37 years old, TAT P.T.A. was a suitable substitute for grafting wax, but TAT LOK seriously depressed graft survival.

Langdon, O. G.
1958. EARLY TRENDS IN A SLASH PINE SEED SOURCE STUDY IN SOUTH FLORIDA. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 123, 2 pp. SE
Third-year results indicated that slash pine from the center of the slash pine range grew better in south Florida than did seedlings from either northern or southern fringes of the range.

Larson, P. R.
1957. EFFECT OF ENVIRONMENT ON THE PERCENTAGE OF SUMMERWOOD AND SPECIFIC GRAVITY OF SLASH PINE. Yale Univ. School Forestry Bul. 63, 89 pp. SE
Percentage of summerwood is the best single criterion for estimating specific gravity. Within a tree cross-section, it is largely controlled by age. Between locations the best estimate of summerwood percentage was from total rainfall during June and July in combination with depth to a fine-textured horizon.

Lightle, P. C.
1959. CONE RUST ON SLASH PINE CONTROLLED BY FERBAM. (Abstract.) Phytopath. 49: 318. SO
Sprays containing 2 pounds of ferbam per 100 gallons of water were effective, especially when the strobilus scales had opened or just after they had closed.

Lindgren, R. M.
1951. THE DISEASE PROBLEM IN RELATION TO TREE IMPROVEMENT. First South. Forest Tree Impr. Conf. Proc. 1951, 5 pp. SO
Analysis of tree-improvement problems in general, and of breeding for disease resistance in particular, against the whole background of forest pathology.

Little, E. L., Jr., and Dorman, K. W.
1952. GEOGRAPHIC DIFFERENCES IN CONE OPENING IN SAND PINE. Jour. Forestry 50: 204-205. SE
Suggests that typical sand pine with closed cones be called Ocala sand pine *or* Ocala race, *whereas that occurring in western Florida with open cones be called* Choctawhatchee sand pine *or* Choctawhatchee race.

——— and Dorman, K. W.
1952. SLASH PINE *(Pinus elliottii)*, ITS NOMENCLATURE AND VARIETIES. Jour. Forestry 50: 918-923. SE
Recommends that the pine in the United States be separated from the Caribbean pine and that a new variety, South Florida slash pine, be recognized.

——— and Dorman, K. W.
1954. SLASH PINE *(Pinus elliottii)* INCLUDING SOUTH FLORIDA SLASH PINE, NOMENCLATURE AND DESCRIPTION. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 36, 82 pp. SE
A report on the botanical basis for a recent change in scientific nomenclature.

Lotti, T.
1955. YELLOW- POPLAR HEIGHT GROWTH AFFECTED BY SEED SOURCE. U. S. Forest Serv. Tree Planters' Notes 22, p. 3. SE
At the end of the third growing season the mountain strain averaged 4.4 feet in height and that from the Coastal Plain 7.9 feet.

McALPINE, R. G.

1957. AGE OF TREE AND ROOT DEVELOPMENT BY AIR-LAYERS IN LOBLOLLY PINE. Fourth South. Forst Tree Impr. Conf. Proc. 1957: 59-63. SE

Rooting was best in the youngest trees, and decreased sharply with increasing age. All living air-layers on 2-year-old trees rooted, but none rooted in trees 17 years or older.

———— and JACKSON, L. W. R.

1959. EFFECT OF AGE ON ROOTING OF LOBLOLLY PINE AIR-LAYERS. Jour. Forestry 57: 565-566. SE

Rooting was best in the youngest age classes and declined sharply with increasing age. None of the air-layers rooted on trees 17 and 20 years old.

McGREGOR, W. H. D., and KRAMER, P. J.

1957. EFFECT OF PHOTOPERIOD ON PHOTOSYNTHESIS, RESPIRATION, AND GROWTH OF LOBLOLLY PINE SEEDLINGS FROM TWO SOURCES. (Abstract.) Plant Physiol. 32: 10-11. SE

The higher photosynthesis rates of larger seedlings are a result of greater needle area. Longer photoperiods increase the needle area, but do not alter the basic rate of photosynthesis.

———— ALLEN, R. M., and KRAMER, P. J.

1961. THE EFFECT OF PHOTOPERIOD ON GROWTH, PHOTOSYNTHESIS, AND RESPIRATION OF LOBLOLLY PINE SEEDLINGS FROM TWO GEOGRAPHIC SOURCES. Forest Sci. 7: 342-348. SE-SO

Long-day (15 hours) treatment stimulated height growth significantly more in Florida than in Georgia seedlings. Georgia seedlings carried on photosynthesis at a significantly higher rate than did Florida seedlings; the rate of long-day seedlings was higher than that of short-day (9.5 hours) seedlings, but the difference was not significant. On the basis of unit-fascicle length, there were no significant source or treatment differences in photosynthesis, nor were respiration differences significant.

McKNIGHT, J. S., and BONNER, F. T.

1961. POTENTIALS AND PROBLEMS OF HARDWOOD TREE IMPROVEMENT. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 164-178. SO

Literature references and tabular summaries of information useful in tree-improvement programs for the southern hardwoods.

McLEMORE, B. F,. CROW, A. B., and WAKELEY, P. C.

1961. DRY-MATTER CONTENT OF LOBLOLLY PINE NEEDLES APPEARS UNRELATED TO GEOGRAPHIC SEED SOURCE. Forest Sci. 7: 373-375. SO

Samples from 25 sources representing extremes in the species' range showed no relation between dry-matter content and latitude, longitude, or climate.

MAISENHELDER, L. C.

1953. ROOTING ASH CUTTINGS WITH HORMONES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 87, pp. 2-3. SO

Forty-seven percent of treated cuttings rooted, as compared to 20 percent of untreated. Treatments were either naphthaleneacetic, indoleacetic, or indolebutyric acid.

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1957. PROPAGATION OF SOME DELTA HARDWOODS BY ROOTING. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 55-58. SO

"So far all of our work . . . has been directed toward finding a simple . . . means of using dormant unrooted cuttings for field planting . . . . Cottonwood and black willow have reproduced satisfactorily both in the nursery and in plantations. Sycamore and green ash have done very well in nursery tests . . . . The oaks will require more intensive testing . . . . Sweetgum is the only species tested that has failed to produce some rooting."

————

1961. SELECTION OF POPULUS CLONES FOR SOUTHERN BOTTOM LANDS. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 110-115. SO

In hardwood tree improvement work at Stoneville, Mississippi, five clones of native cottonwood and one Euramerican hybrid have thus far emerged as the best Populus planting stock. Some other hybrids grow more slowly than cottonwood but have attributes worth perpetuating.

MANN, W. F., JR., and RUSSELL, T. E.

1956. RINGING STIMULATES LONGLEAF CONE PRODUCTION. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 103, pp. 3-4. SO

Three years after partial girdling, cone production on treated trees was more than double that on untreated trees.

———— and RUSSELL, T. E.

1957. LONGLEAF CONE PRODUCTION DOUBLED BY RINGING. U. S. Forest Serv. Tree Planters' Notes 28, pp. 6-7. SO

Ringing was done by cutting two half-circles through the cambium on opposite sides of the bole, slightly above stump height. Trees smaller than 10 inches in d.b.h. did not respond, probably because they were too small to bear cones abundantly.

MATTHEWS, F. R., and MCLINTOCK, T. F.

1958. EFFECTS OF FUNGICIDES ON POLLEN GERMINATION OF SLASH AND LONGLEAF PINE. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 122, 2 pp. SE

At concentrations used in sprays for cone rust, and also at lower concentrations, captan and Basi-cop depressed pollen germination, Puratized prevented it, and ferbam increased it.

MERGEN, F.

1953. AIR-LAYERING AS A POSSIBLE METHOD TO REPRODUCE SELECTED SLASH PINE. Naval Stores Rev. 63(21): 19-20. SE

Long known to horticulturists as a method of reproducing cultivated plants, air-layering has been used successfully for the first time on slash pine.

1953. FIRST MATURE CONES COLLECTED FROM ROOTED SLASH PINE CUTTINGS. AT-FA Jour. 15(10): 8-9. SE

Beginning with the rooting of cuttings in 1943-44, this is the first recorded production of mature cones from rooted slash pine.

1953. GUM YIELD IN LONGLEAF PINE INHERITED. Naval Stores Rev. 62(47): 18-19. *Also as* GUM YIELDS IN LONGLEAF PINE ARE INHERITED. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 29, 2 pp. *Also in* AT-FA Jour. 15(5): 14-17. SE

First evidence that gum-yielding capacity is inherited is obtained from 17-year-old progeny test.

1953. SELECTION AND BREEDING OF SLASH AND LONGLEAF PINE AT LAKE CITY, FLORIDA. Ztschr. f. Forstgenet. u. Forstpflanzenzucht. 2(6): 126-129. *Also in* Second South. Forest Tree Impr. Conf. Proc. 1953, 7 pp. *And in* Internatl. Union Forest Res. Organ. Cong. Proc. 11: 481-487. 1954. *Also as* SELECTION AND BREEDING OF LONGLEAF PINE. Naval Stores Rev. 63(7): 12-14, 23-26. SE

Preliminary report on single-tree, nursery-bed, and mass (merchantable stand) selection, and on rooting of cuttings, grafting, and especially the development of progeny from controlled crosses made in the 1940's.

1953. THE STORY OF SOME UNIQUE TREES. South. Lumberman 186(2329): 72, 74. SE

For the first time, mature cones were collected from rooted slash pine cuttings, bringing researches closer to the goal of developing high-yielding pines for naval stores.

1954. ANATOMICAL STUDY OF SLASH PINE GRAFT UNIONS. Quart. Jour. Fla. Acad. Sci. 17: 237-245. SE

Parenchymatous cells of medullary rays, phloem, cortex, and cambium participated in bridging the space between stock and scion tissues. The stock contributed the greatest part of the wound tissue, but the scion took part in callus formation. A continuous bridge between respective anatomical parts of the graft partners was apparent after 6 weeks.

1954. GRAFTING SUCCULENT SLASH PINE SCIONS. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 59, 2 pp. SE

The discovery that scions can be grafted in the succulent stage promises to prolong the grafting season by several months.

1954. HETEROPLASTIC MICROGRAFTING OF SLASH PINE. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 47, 17 pp. SE

A project in grafting 1- to 6-month-old slash pine seedlings onto other coniferous species such as white spruce, white pine, and ponderosa pine.

1954. IMPROVING THE EARLY GROWTH OF LONGLEAF PINE. Naval Stores Rev. 64(3): 12-13, 21. *Also in* Forest Farmer 13(11): 8-9, 16-17. SE

Some 261 slash-longleaf pine hybrids have been produced for possible use in reforestation of dry sites.

1954. INHERITANCE OF OLEORESIN YIELD IN SLASH PINE. AT-FA Jour. 17(2): 16-18. *Also in* Naval Stores Rev. 64(9): 8-9, 20. SE

A test of the progeny from parent trees selected for high-gum production showed that gum-yielding ability is inherited.

1954. SELF-FERTILIZATION IN SLASH PINE REDUCES HEIGHT GROWTH. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 67, 2 pp. SE

Self-pollination tends toward poor seed set, low germination, reduced vigor, deformed growth, retarded flowering, or some degree of albinism.

1954. VARIATION IN 2-YEAR-OLD SLASH PINE (*P. elliottii* var. *elliottii*) SEEDLINGS. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 62, 2 pp. SE

Survival of seedlings from all five geographic seed sources in Florida was high, but the growth of one from Polk County was low.

MERGEN, F.
1954. VEGETATIVE PROPAGATION TECHNIQUES FOR GENETICS STUDIES OF SLASH PINE (*Pinus elliottii* Engelm.). Amer. Soc. Plant Physiol. Program for 29th Ann. Mtg., pp. 6-7. SE
Brief review of techniques.

———
1955. AIR-LAYERING OF SLASH PINES. Jour. Forestry 53: 265-270. SE
The feasibility of air-layering as a technique in asexual propagation of slash pine is demonstrated.

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1955. GRAFTING SLASH PINE IN THE FIELD AND IN THE GREENHOUSE. Jour. Forestry 53: 836-842. SE
Summarizes experiments with cleft, veneer or side-slit, and bottle grafts in the greenhouse and field.

———
1955. INHERITANCE OF DEFORMITIES IN SLASH PINE. South. Lumberman 190(2370): 30-32. SE
Progeny after open pollination of a crooked slash pine were 76 percent crooked; those of the same tree crossed with a straight tree were 68 percent crooked; those of the straight tree used as a female parent in other crosses were 41 percent crooked.

———
1955. ROOTING AND GRAFTING OF SLASH PINE. Third South. Forest Tree Impr. Conf. Proc. 1955: 88-94. SE
Describes successful techniques for rooting, grafting, and air-layering.

———
1955. VEGETATIVE PROPAGATION OF SLASH PINE. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 54, 63 pp. SE
Details of many experiments in asexual propagation.

——— and HOEKSTRA, P. E.
1954. GERMINATION DIFFERENCES IN SLASH PINE FROM VARIOUS SOURCES. South. Lumberman 189(2364): 62, 64, 66. SE
Real differences are indicated in seed characteristics from collections in different locations.

——— and POMEROY, K. B.
1953. SOME PRACTICAL SUGGESTIONS FOR BETTER SLASH PINE SEED. South. Lumber Jour. 57(11): 88-89. SE
Organizations with extensive reforestation programs might improve seed quality in slash pine by improving selected natural stands of vigorous, even-aged, cone-bearing trees. Method of improvement and hints for seed collection are discussed.

——— and POMEROY, K. B.
1954. SUGGESTIONS FOR BETTER SLASH PINE SEED. Forest Farmer 13(5): 6-7, 15. SE
Directions for selection and reservation of trees capable of producing superior seeds in quantity.

——— and POMEROY, K. B.
1954. TREE IMPROVEMENT RESEARCH AT THE LAKE CITY, FLORIDA, RESEARCH CENTER, A PROJECT ANALYSIS. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 45, 59 pp. SE
Superior attributes sought are rapid growth, disease resistance, better stem form, and improved grain or density of wood.

——— and ROSSOLL, H.
1954. HOW TO ROOT AND GRAFT SLASH PINE. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 46, 22 pp. SE
A graphic exposition of new techniques for asexual propagation of pines useful as breeding stock (45 drawings).

——— HOEKSTRA, P. E., and ECHOLS, R. M.
1955. GENETIC CONTROL OF OLEORESIN YIELD AND VISCOSITY IN SLASH PINE. Forest Sci. 1: 19-30. SE
Gum yield and viscosity were highly controlled genetically, while number and size of resin ducts were not.

——— ROSSOLL, H., and POMEROY, K. B.
1955. HOW TO CONTROL THE POLLINATION OF SLASH AND LONGLEAF PINE. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 58, 14 pp. SE
Latest techniques are presented in true-to-life drawings.

MERKEL, E. P., BEERS, W. L., and HOEKSTRA, P. E.
1959. PROBLEMS INVOLVED IN THE CONTROL OF CONE INSECTS BY AERIAL SPRAYING. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 77-81. SE
Evaluates problems brought to light in an inconclusive attempt to control, with BHC, Dioryctria *and other cone insects on seed production areas 25 to 56 acres in size. Stresses importance of flower and cone counts at various stages, and need for knowledge of cone insect biology.*

MINCKLER, L. S.
1939. GENETICS IN FORESTRY. Jour. Forestry 37: 559-564. SE
Considerable confusion exists regarding the application of genetics to forestry practice in America. It is emphasized that we should apply all that is known about genetics until research establishes further facts.

MINCKLER, L. S.

1942. ONE-PARENT HEREDITY TESTS WITH LOBLOLLY PINE. Jour. Forestry 40: 505-506. SE

One hundred and five lots of 1-0 loblolly seedlings grown from the seed of widely differing parent trees were planted in a randomized block. Fifth-year survival and growth measurements showed no significant relation with any observable characteristics of adult mother trees. The data did show significant differences in both growth and survival of progenies from different mother trees.

———

1945. SEED SOURCE. IS IT TAKEN SERIOUSLY? Jour. Forestry 43: 749-750. SE

Data collected on shortleaf and loblolly seed source for forest nurseries of 12 States show a lack of progress in obtaining a satisfactory seed source. Absence of a sound policy is attributed to lack of conviction that source is of real importance and to the conflict between technical considerations and administrative efficiency.

MITCHELL, H. L.

1942. BETTER TREE STRAIN SOUGHT IN TESTS AT EXPERIMENT STATION. Forest Farmer 1(11): 1, 3. SO

Trees of exceptionally high gum yield are being identified and their vegetative propagation attempted.

———

1942. DEVELOPMENT OF A HIGH-YIELDING STRAIN OF NAVAL STORES PINE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 45, p. 3. SO

Objectives and accomplishments of the project after about 6 months of work. Reports successful rooting of cuttings from very young trees.

———

1942. THE DEVELOPMENT OF A HIGH-YIELDING STRAIN OF NAVAL STORES PINE. Naval Stores Rev. 52(7): 10, 12. *Also as* VEGETATIVE METHODS OFFER PROMISING SHORT CUTS IN PROPAGATING THE HIGH-YIELDING PINE TREES. AT-FA Jour. 4(7): 8-9. SO

Announces establishment and objectives of the project to develop a high-yielding strain of pine for naval stores use and gives progress for the first 6 months of work. Reports successful rooting of cuttings from very young trees.

——— and WHEELER, P. R.

1959. THE SEARCH FOR WOOD QUALITY. Two parts. Forest Farmer 18(4): 4-6 and 18(5): 10-12. *Also as* WOOD QUALITY OF MISSISSIPPI'S PINE RESOURCES. U. S. Forest Serv. Forest Prod. Lab. Rpt. 2143, 20 pp. SO

Highlights of wood-density research in southern pines, carried on in connection with the third Forest Survey of Mississippi.

——— and WHEELER, P. R.

1960. SPECIFIC GRAVITY—A MEASURE OF INTRINSIC WOOD QUALITY. Soc. Amer. Foresters Proc. 1959: 53-57. SO

Relationships of specific gravity to age of wood, species, and latitude and longitude of the growing site were investigated by extensive sampling of the major southern pine species in Mississippi.

——— SCHOPMEYER, C. S., and DORMAN, K. W.

1942. PEDIGREED PINE FOR NAVAL STORES PRODUCTION. Sci. 96: 559-560. SO

Describes work on the project and accomplishments in selection where trees producing from two to three times as much gum as average trees were located. Also reports on experiments in vegetative propagation and details of method used to root cuttings from mature trees.

——— SCHOPMEYER, C. S., and DORMAN, K. W.

1942. RECENT DEVELOPMENTS IN THE SELECTION AND PROPAGATION OF HIGH-YIELDING NAVAL STORES PINE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 46, pp. 3-4. SO

Progress and accomplishments after about the first year of work. Superior trees producing from two to three times the yield of gum from average trees were located, and cuttings from mature slash pine trees were successfully rooted.

NAMKOONG, G.

1960. FEMALE FLOWERS ON ONE-YEAR-OLD PITCH PINE. Forest Sci. 6: 163. SO

A new degree of female flowering precocity for pines.

NEELANDS, R. W., and JEWELL, F. F.

1961. THE SEARCH FOR PEST-RESISTANT TREES. Forest Farmer 21(1): 15, 26, 28. SO

Work on fusiform-rust resistance at the Southern Institute of Forest Genetics exemplifies the possibilities of breeding for pest resistance.

NELSON, T. C.

1957. A METHOD FOR VEGETATIVELY PROPAGATING YELLOW-POPLAR. Jour. Forestry 55: 589. SE

Entire seedlings were split longitudinally, the exposed tissues coated with lanolin, and the upper half of the stem clipped off. All seedlings so treated in December and January callused over and grew.

NELSON, T. C.
1957. ROOTING AND AIR-LAYERING SOME SOUTHERN HARDWOODS. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 51-54. SE
Successful rooting of cuttings from eastern cottonwood, sycamore, and yellow-poplar, and successful air-layering of sycamore, green ash, sweetgum, and eastern cottonwood are reported.

——— and MARTINDALE, D. L.
1957. ROOTING AMERICAN SYCAMORE CUTTINGS. Jour. Forestry 55: 532. SE
Cuttings 20 inches long from 1-year-old sprouts were made in October, kept in cold storage, and planted in November and in March. Survival and growth were best for large-diameter cuttings.

NIENSTAEDT, H., CECH, F. C., MERGEN, F., AND OTHERS.
1958. VEGETATIVE PROPAGATION IN GENETICS RESEARCH AND PRACTICE. Jour. Forestry 56: 826-839. SE
Factors affecting success of vegetative propagation and details of methods—grafting, rooting, and air-layering—that seem to offer most promise with American species.

OSTROM, C. E.
1953. MORE AND BETTER TREES: THE ACTIVITIES OF THE COMMITTEE ON SOUTHERN FOREST TREE IMPROVEMENT. South. Lumberman 186 (2326): 35-36. *Also as* ACCOMPLISHMENTS OF THE COMMITTEE ON SOUTHERN FOREST TREE IMPROVEMENT. Naval Stores Rev. 62(51): 14-15, 26-28. *Also as* RECENT DEVELOPMENTS IN THE SOUTHERN FOREST TREE IMPROVEMENT PROGRAM. (Abstract.) Assoc. South. Agr. Workers Proc. 50: 115-116. SE
Function, accomplishments, and plans of the Committee on Southern Forest Tree Improvement.

———
1953. THE ACTIVITIES OF THE COMMITTEE ON SOUTHERN FOREST TREE IMPROVEMENT. Second South. Forest Tree Impr. Conf. Proc. 1953, 7 pp. SE
Origin, objectives, organization, and first 2 years' activities of the widely representative regional Committee.

———
1955. THE TREE IMPROVEMENT RESEARCH PROGRAM AT THE SOUTHEASTERN FOREST EXPERIMENT STATION. Third South. Forest Tree Impr. Conf. Proc. 1955: 101-104. SE
Studies in variation and inheritance, project work in selective breeding, and many facilitating studies are being conducted concurrently at several research centers.

PESSIN, L. J.
1934. EFFECT OF FLOWER PRODUCTION ON RATE OF GROWTH OF VEGETATIVE SHOOTS OF LONGLEAF PINE. Sci. 80: 363-364. SO
Does the production of staminate strobili reduce the growth of the shoots on which they occur, or does weakening of the shoots by other influences favor the development of staminate rather than pistillate strobili?

———
1936. UNUSUAL LONGLEAF PINE SEEDLINGS. Jour. Forestry 34: 817-818. SO
Natural seedlings produced pistillate cones when 1-4 feet high and in the sixteenth growing season.

POMEROY, K. B.
1953. BETTER TREES FOR TOMORROW. Naval Stores Rev. 63(20): 19, 21-22. *Also in* AT-FA Jour. 16(2): 18. SE
Propagation and controlled breeding, proven tools of the horticulturist and agronomist, are now being used in developing superior strains of longleaf and slash pine.

———
1953. RESEARCH IN TREE IMPROVEMENT AT LAKE CITY. TAPPI 36(11): 147a-150a. SE
Forest managers who remove undesirable trees, leave only the best trees for regeneration, and plant seedlings from the best available local parentage can reap the benefits of eugenic forestry while waiting for the deferred benefits of controlled breeding.

———
1953. TREE IMPROVEMENT—ITS POTENTIALITIES. Forest Farmer 12(11): 8-9, 11. *Also in* The Unit, News Letter 48, pp. 25-27. *Also in* Paper Trade Jour. 137(6): 18-19. SE
Preliminary results show that the value of forest trees can be increased by genetic control of inherited characteristics. Best returns in forest-tree improvement will probably be achieved by combined efforts of silviculturists working with environmental factors and geneticists working with inherited factors.

———
1954. BETTER TREES FOR TOMORROW. Fla. Grower and Rancher 17(2): 12, 34. SE
General review of the possibilities of improvement of southern pine trees through genetic research.

———
1954. LOOKING AHEAD WITH NAVAL STORES. Forest Farmer 13(12): 14, 18. SE
Discussion of future trends in the naval stores industry, describing the part to be played by high-yielding strains of pine.

Pomeroy, K. B.
1955. selecting slash pine for greater yields of turpentine. Third South. Forest Tree Impr. Conf. Proc. 1955: 47-49. SE
Gives evidence that gum-yielding ability is strongly inherited in slash pine and that it is possible to select and breed genetically superior trees.

———
1955. up-grading slash pine seed sources. Soc. Amer. Foresters Proc. 1954: 74-75. *Also as* how we get good pine seed. Prog. Farmer 70(10): 34D. SE
Recommends selection of genetically superior trees and establishment of clonal seed orchards.

——— and Mergen, F.
1955. better slash pine seed. Forest Farmer 14(6): 11. *Also as* better forests a reality. Natl. Container Digest 8(4): 5. 1954. SE
An 86-acre seed producing area was created by removing undesirable phenotypes from a 20-year-old slash pine plantation.

Putnam, J. A.
1955. possibilities of genetics research in southern hardwoods. Third South. Forest Tree Impr. Conf. Proc. 1955: 44-47. SO
A little work has been done on artificial regeneration and on genetic selection of cottonwood, but virtually nothing on numerous other valuable hardwood species. Specific suggestions are offered.

Reines, M., and McAlpine, R. G.
1960. the morphology of normal, callused, and rooted dwarf shoots of slash pine. Bot. Gaz. 121: 118-124. SE
Individual needles are capable of callus formation and root development. Cortex and pith contribute largely to callus formation but cambial cells and parenchyma can also proliferate.

Russell, T. E.
1960. why gamble on pine seed? Forests and People 10(3): 35, 42, 46-47. SO
"The time has come . . . when steps must be taken to improve the quality of Louisiana's pine seed, and to put seed procurement on the same high level as other forest practices."

Schoenike, R. E.
1955. why pine seed crops fail. Forest Farmer 14(10): 10. SO
In March 1955, loblolly and shortleaf pines near Crossett, Arkansas, bore abundant flowers, but heavy spring rains washed the loblolly pollen out of the air, and a late freeze ruined the shortleaf flowers. In consequence, a very poor cone crop may be expected in 1956.

———
1956. plastic tubes for controlled pollination of pine. Jour. Forestry 54: 135. SO
Small plastic tubes have a slightly higher initial cost than most other bagging materials, but they can be used for years. They are light in weight, and their stiffness protects the flowers.

Schopmeyer, C. S.
1953. the characteristics of a high gum-yielding tree. Naval Stores Rev. 63(12): 12-13. *Also in* AT-FA Jour. 15(10): 4. *Also as* U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 39, 2 pp. SE
The factors controlling gum flow in slash pine appear to be size of resin ducts exposed by chipping, number of ducts per square inch of fresh face, viscosity of gum, and exudation pressure. If these factors are inheritable, trees rating high on all four can be developed by controlled breeding.

——— Mergen, F., and Evans, T. C.
1954. applicability of poiseuille's law to exudation of oleoresin from wounds on slash pine. Plant Physiol. 29: 82-87. SE
The variables in a modification of the equation for Poiseuille's Law for the flow of liquids through capillaries were measured in the resin duct system of 12 slash pine trees (Pinus elliottii *Engelm. var.* elliottii). *The modified equation is given.*

Shoulders, E.
1961. effect of seed size on germination, growth, and survival of slash pine. Jour. Forestry 59: 363-365. SO
Small seeds yielded smaller seedlings and fewer of plantable grade than medium and large seeds, but growth during the first year in the field eliminated much of the height difference present in the nursery. Nursery germination and field survival were not related to seed size.

Sluder, E. R.
1960. early results from a geographic seed source study of yellow-poplar. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 150, 2 pp. SE
Seedlings of local source had significantly higher survival but not faster growth than others. Time of height growth initiation was correlated with length of growing season, date of last killing frost, and latitude of the source of seed.

SMITH, R. H., and MERGEN, F.
1954. A BARK BEETLE ATTACKING SCIONS OF GRAFTED SLASH PINES. Jour. Forestry 52: 864-865. *Also as Pityophthorus pulicarius* (Zimm.), A BARK BEETLE ATTACKING SCIONS OF GRAFTED PINES. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 64, 2 pp. SE

In March and April, the beetle extensively damaged slash pines newly grafted for seed orchards. It usually attacked old growth, above the unions. Dusting with BHC is suggested.

SNOW, A. G., JR., DORMAN, K. W., and SCHOPMEYER, C. S.
1943. BREEDING BLUEBLOOD PINES. AT-FA Jour. 5(6): 8-10. SO

Flowering characteristics of slash pine and the importance of using good breeding stock in the development of superior pine trees are given.

——— DORMAN, K. W., and SCHOPMEYER, C. S.
1943. DEVELOPMENTAL STAGES OF FEMALE STROBILI IN SLASH PINE. Jour. Forestry 41: 922-923. SO

Early growth and development of the female flower is divided into four stages: (1) suitable for placing pollination bags; (2) latest stage for bagging; (3) optimum for pollinating; (4) beyond receptive stage, and bags may be removed.

SNOW, G. A.
1958. CULTURAL DIFFERENCES IN ISOLATES OF *Scirrhia acicola* FROM *Pinus palustris* AND *P. taeda*. (Abstract.) Phytopath. 48: 398. SO

Considerable variation occurs in cultural characteristics of isolates of the brown-spot fungus. Differences are not correlated with host species.

———
1961. ARTIFICIAL INOCULATION OF LONGLEAF PINE WITH *Scirrhia acicola*. Phytopath. 51: 186-188. SO

Longleaf and loblolly seedlings were inoculated with isolates from loblolly as well as longleaf trees. Infection occurred only on immature longleaf needles, not on loblolly. Cultural characters varied widely from isolate to isolate, and could not be correlated with infectious characteristics. Isolates from longleaf were more infective than those from loblolly.

SNYDER, E. B.
1957. POLLEN HANDLING. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 111-115. SO

Means of hastening the shedding of pollen, and of extracting and storing pollen.

———
1959. COMMENTS ON "THE DIVERGENT POINTS OF VIEW OF FOREST GENETICISTS AND OF AGRONOMIC AND HORTICULTURAL CROP BREEDERS." Jour. Forestry 57: 666-668. SO

Rebuttal to an earlier article by L. I. Inman.

SNYDER, E. B. (Editor)
1959. GLOSSARY FOR FOREST TREE IMPROVEMENT WORKERS. U. S. Forest Serv. South. Forest Expt. Sta. for Soc. Amer. Foresters, 22 pp. SO

Simplified definitions of about 160 terms that are in general use by tree breeders but may not be familiar to persons with only a slight botanical background.

SNYDER, E. B.
1960. A FOREST-GENETICS LITERATURE CLASSIFICATION BASED ON THE OXFORD DECIMAL CLASSIFICATION (ODC). Silvae Genetica 9: 167-168. SO

Adaptation of the ODC developed and used at the Southern Institute of Forest Genetics.

———
1961. EXTRACTING, PROCESSING, AND STORING SOUTHERN PINE POLLEN. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 191. 14 pp. SO

Results from four years' experimentation at the Southern Institute of Forest Genetics. Recommends extracting pollen from ripe strobili in dry, warm, moving air and storing it at 22 percent relative humidity and 32° F.

———
1961. MEASURING BRANCH CHARACTERS OF LONGLEAF PINES. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 184, 4 pp. SO

From measurements of mature branches on 48 longleaf trees it was deduced that the best place to determine inherent branch angles and diameters was a "zone of equilibrium" in the middle crown where diameters of successive branches down the bole increased in proportion to bole diameter.

———
1961. RACIAL VARIATION IN ROOT FORM OF LONGLEAF PINE SEEDLINGS. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 53-59. SO

Roots of 1-year-old longleaf pines from seed sources in southeastern Georgia are more fibrous than those of seedlings representing sources in Alabama, Mississippi, and Louisiana.

Snyder, E. B., and Rossoll, H.
1958. CLIMBING SOUTHERN PINES SAFELY. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 159, 17 pp. SO
Illustrated guide to climbing with sectional ladders.

——— and Rossoll, H.
1959. CLIMBING TREES IS DANGEROUS! Forests and People 9(1): 13-14. SO
Safety advice for tree climbers.

——— Grigsby, H. C., and Hidalgo, J. U.
1961. X-RADIATION OF SOUTHERN PINE SEED AT VARIOUS MOISTURE CONTENTS. Silvae Genetica 10: 125-131. SO
Mortality and growth depression, prerequisites for producing mutations, were determined by X-irradiating seed at 0 to 1800 r. Stratification prior to irradiation produced more severe damage than other methods of moistening the seed. Filtering the rays intensified effects noted for unfiltered rays. One-year-old shortleaf seedlings from seed receiving 300 to 400 r were heavier than controls, but cone production at 7 years was not stimulated.

Squillace, A. E., and Bengtson, G. W.
1961. INHERITANCE OF GUM YIELD AND OTHER CHARACTERISTICS OF SLASH PINE. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 85-96. SE
For plantation trees about 15 years old heritability percents as determined by components of variance method for traits in cross- and wind-pollinated progenies, respectively, were as follows: Diameter at breast height 33 and 29 to 58; stem volume 31 and 18 to 35; total height 13 and 8 to 16; crown width 12 and 34 to 48; and bark thickness 57 and 33 to 67. Heritability percents for oleoresin yield as determined by various methods were as follows: selection experiment 45; regression of offspring on midparent yields from cross pollinations 56; regression of offspring on female parent from wind-pollinations 62; components of variance among wind-pollinated progenies 45 to 90, and components of variance among clones 90.

——— and Dorman, K. W.
1959. SELECTIVE BREEDING OF SLASH PINE FOR HIGH OLEORESIN YIELD AND OTHER CHARACTERS. (Abstract.) Ninth Internatl. Bot. Cong. Proc. 2: 375. SE
Inherent variation has been found in oleoresin yield, oleoresin viscosity, and tracheid length. Selection within the species for these traits is feasible.

——— and Dorman, K. W.
1961. SELECTIVE BREEDING OF SLASH PINE FOR HIGH OLEORESIN YIELD AND OTHER CHARACTERS. Recent Advances in Botany, pp. 1616-1621. Toronto. SE
Eleven-year-old progeny were microchipped. Crosses among high-yielding parents produced 238 grams; high yielders crossed with average yielders 140 grams; average yielders crossed with average yielders 109 grams. Heritability of yield computed by various methods was "selection experiment" 45 percent; correlation of offspring on mean yield of parents after control-pollination 56 percent; correlation of offspring on female parent after wind pollination 62 percent; and components-of-variance method with wind-pollinated progenies 90 percent.

——— and Kraus, J. F.
1959. EARLY RESULTS OF A SEED SOURCE STUDY OF SLASH PINE IN GEORGIA AND FLORIDA. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 21-34. SE
Seed collected from an apparently optimum climatic zone seems to be moderately superior even when planted in other climates within the range of the species.

Toole, E. R.
1948. ROOTABILITY OF CUTTINGS. Amer. Nurseryman 88(2): 72. SE
Rooting tests with the mimosa tree showed that in the case of stem cuttings the nearer the root system the cuttings were taken the better they rooted, indicating increased content of rooting hormone as one progresses from branch tip to branch-to-stem and down the stem.

———
1949. SELECTION AND PROPAGATION OF WILT-RESISTANT MIMOSA TREES. Trees 9 (4): 10, 12, 16. SE
Describes the wilt resistance found in the mimosa tree, and gives directions for rooting cuttings of root pieces for propagation of resistant clones.

———
1952. TWO RACES OF *Fusarium oxysporum f. perniciosum* CAUSING WILT OF *Albizzia spp.* Phytopath. 42: 694. SE
One race attacks A. julibrissin *and one attacks* A. procera *(Puerto Rico).*

———
1955. PERFORMANCE OF WILT-RESISTANT MIMOSA TREES IN HIGH-HAZARD AREAS. U. S. Dept. Agr. Plant Dis. Rptr. 39: 874. SE-SO
Ten resistant clones have survived and grown for 5 years in localities where native trees had been killed by the wilt.

Toole, E. R., and Hepting, G. H.

1949. selection and propagation of *Albizzia* for resistance to fusarium wilt. Phytopath. 39: 63-70. SE

In testing certain species of Albizzia, *mainly* A. julibrissin, *for resistance to Fusarium wilt, 1,437 seedlings have been grown from seed collected at various locations from Maryland to Louisiana, and their roots inoculated. Twenty of these trees have survived the disease as long as 8 years, despite repeated inoculations, and in the more recent experiments many more have survived for shorter periods. Fifty-six percent of the seedlings grown from seed resulting from uncontrolled pollination of the resistant selections were wilt-resistant.*

All cuttings rooted from the resistant selections have thus far appeared immune to the wilt despite successive inoculations, while rooted cuttings from neighboring nonresistant wildings became diseased and died following inoculation.

VanHaverbeke, D. F., and Barber, J. C.

1961. less growth and no increased flowering from changing slash pine branch angle. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 167, 2 pp. SE

Branches fixed at 90° from the vertical or 120° downward on 5-year-old grafted seed orchard trees showed no positive increase in flowering. Branch elongation decreased as branch angle increased with branches in upper whorls growing more than those in lower whorls.

Wahlgren, H. E., and Fassnacht, D. L.

1959. estimating tree specific gravity from a single increment core. U. S. Dept. Agr. Forest Prod. Lab. Rpt. 2146, 24 pp. SO

Method of estimating average specific gravity of the merchantable volume in a southern yellow pine tree from a single increment core.

Wakeley, P. C.

1927. the sins of the fathers. U. S. Forest Serv. Serv. Bul. 11(17): 3-4. SO

Sonderegger pine (longleaf × loblolly) is susceptible to forms of injury that affect one or the other parent species, but not both. Reports high incidence of brown spot (erroneously called "rust" in 1927) and rabbit damage on hybrids 5 months after they were planted as 1-0 stock.

1937. recommendations for improvement of forest trees. U. S. Dept. Agr. Yearbook 1937: 1266. SO

Urges study of climatic and edaphic races and of single- and double-parent inheritance of both pines and hardwoods; development of disease-, insect-, and wind-resistant pines and high-naval-stores-yielding pines; and, in particular, selection for superior height growth.

1944. geographic source of loblolly pine seed. Jour. Forestry 42: 23-32. SO

The 15-year results of a provenance test of local (Louisiana), Texas, Georgia, and Arkansas loblolly pines established at Bogalusa, Louisiana, with seed of the 1925 crop. Differences in height, diameter, volume, and degree of fusiform rust infection were highly significant. The local stock excelled on all counts, with Texas stock next. Georgia stock was far more heavily infected with rust than the other 3. Survival did not vary significantly.

1950. plant loblolly pines from local seed. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 66, p. 1. *Also in* Jour. Forestry 48: 348; *and in* The Unit, News Letter 31, p. 18. SO

Loblolly pines from local (Louisiana), Texas, Georgia, and Arkansas seed, planted at Bogalusa, Louisiana, produced 41.8, 22.7, 17.7, and 15.4 cords per acre, respectively, in 22 years. Corresponding average heights were 46, 41, 38, and 36 feet; diameters b.h. were 6.7, 5.2, 5.2, and 4.7 inches. The Georgia stock had 37 percent of stems with fusiform rust cankers; the other 3 stocks, only 4 to 6 percent.

1951. importance of geographic strains. First South. Forest Tree Impr. Conf. Proc. 1951, 9 pp. SO

Touches briefly on the history of provenance tests. Enunciates the principle of selecting and hybridizing within the framework of geographic strains. Summarizes American findings with loblolly pine of the 1925 and 1935 crops and South African with the 1935 crop. Cites U. S. Department of Agriculture Forest Seed Policy, and proposes a new southwide pine seed source study. A separate includes also 2 tables and 4 pages of references on provenance tests.

WAKELEY, P. C.

1952. HOW SEED SOURCE AND SEEDLING STOCK AFFECT REFORESTATION. Forest Farmer 12(2): 16, 28. SO

Attributes most variations in initial survival to nursery stock quality rather than to geographic or individual-tree source of seed, and subsequent disease resistance and especially growth to seed source rather than to stock quality. Illustrates by the 1925 loblolly seed-source study at Bogalusa, Louisiana. Sketches a southwide seed-source study of 4 species being established with 1951 seed.

1953. PROGRESS IN STUDY OF PINE RACES. South. Lumberman 187(2345): 137-140. SO

Background, object, and establishment of the Southwide Pine Seed Source Study. Describes racial differences observed in the nurseries and in a few of the first-year plantations.

1953. STUDIES OF GEOGRAPHIC RACES OF SOUTHERN PINES. Naval Stores Rev. 62(51): 12-13, 30. SO

Results of loblolly seed-source studies established in various places with seed from 1925, 1935, and later crops. Describes cooperative study of longleaf, slash, loblolly, and shortleaf pines being established in 16 States with 1951 and 1952 seed.

1953. THE SOUTH ESTABLISHES A MAJOR PINE GEOGRAPHIC SEED SOURCE STUDY. Second South. Forest Tree Impr. Conf. Proc. 1953, 6 pp. SO

Purpose and design of the Southwide Pine Seed Source Study and its progress through December 1952.

1954. PLANTING THE SOUTHERN PINES. U. S. Dept. Agr. Agr. Monog. 18, 233 pp. SO

Encyclopedic treatment of planting policies, seed, nursery practice, planting, and plantation care, applicable to the planning, seed-handling, nursery, planting, and protection phases of genetics research and tree improvement. Pages 14-16 report and illustrate the 15- and 22-year results of the 4-source provenance test of loblolly pine established at Bogalusa, Louisiana, with seed of the 1925 crop. Pages 29-30 and 33-34 include notes on the phenology and biology of pollination, fertilization, seed maturation, and seed dissemination of the 4 principal southern pines.

1954. THE RELATION OF GEOGRAPHIC RACE TO FOREST TREE IMPROVEMENT. Jour. Forestry 52: 653. SO

Provenance tests do not of themselves constitute tree improvement, as their immediate function is to keep planted stands from falling below the productive level of indigenous natural stands. The techniques they require, however, are essentially those of progeny tests for tree improvement, and in the broadest sense provenance tests are basic to all tree improvement, which must be carried out within the framework of geographic races.

1955. SET-BACKS AND ADVANCES IN THE SOUTHWIDE PINE SEED SOURCE STUDY. Third South. Forest Tree Impr. Conf. Proc. 1955: 10-13. SO

Notes on racial variations in the nursery and early plantation phases. Losses to drought in western part of study territory necessitate additional longleaf and shortleaf pine plantations.

1957. FOREST TREE-IMPROVEMENT WORK IN THE SOUTH. South. Lumberman 195(2441): 126-129. SO

Work being done by educational institutions, Federal agencies, State departments of forestry, industrial organizations, and the Committee on Southern Forest Tree Improvement.

1958. SUMMARY OF FOREST TREE IMPROVEMENT WORK IN THE SOUTH. Fifth Northeast. Forest Tree Impr. Conf. Proc. 1957: 14-19. *Also in* Third Lake States Forest Tree Impr. Conf. Proc. 1957: 65-71. U. S. Forest Serv. Lake States Forest Expt. Sta. Sta. Paper 58, 87 pp. SO

Past and current activities of educational institutions, Federal agencies, State forestry departments and commissions, industry, and the Committee on Southern Forest Tree Improvement.

1959. FIVE-YEAR RESULTS OF THE SOUTHWIDE PINE SEED SOURCE STUDY. Fifth. South. Forest Tree Impr. Conf. Proc. 1959: 5-11. SO

Preliminary analyses have shown statistically significant variations, attributable to seed source, in the survival and average height of all four major southern pines, and in the rust-susceptibility of loblolly pine.

WAKELEY, P. C.

1961. RESULTS OF THE SOUTHWIDE PINE SEED SOURCE STUDY THROUGH 1960-61. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 10-24. SO

Significant variations in survival and height appear among different geographic sources of both loblolly and shortleaf pine, especially from north to south. In longleaf they appear almost as much from east to west as from north to south. Loblolly varies significantly in fusiform rust infection, especially from east to west. Slash pine occurring north and west of mid-Florida exhibits relatively less variation than these species.

——— and CAMPBELL, T. E.

1954. SOME NEW PINE POLLINATION TECHNIQUES. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 136, 13 pp. SO

Practical pointers on sausage-casing pollination bags and on inexpensive pollen extractors and pollenizers. Of greatest value are close-up photographs of longleaf pine female strobili at "Placerville" stages 2-6.

——— and CAMPBELL, T. E.

1960. SEEDLESS LONGLEAF CONES CAN MATURE AND OPEN. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 127, pp. 3-4. SO

An artificially pollinated longleaf flower produced a cone with no seeds, either filled or empty.

——— and COSSITT, F. M.

1950. WHAT ABOUT OUR TREE SEED SOURCE? Forest Farmer 9(7): 7, 13. SO

The 22-year results of the 1925 loblolly seed-source study at Bogalusa, Louisiana; interprets the findings in terms of 20-acre plantations from which wood might be sold at $2.00 a cord; and advises concerning geographic sources of seed for southern pine plantations in general.

——— and HENRY, B. W.

1955. PROGRESS IN TREE IMPROVEMENT RESEARCH AT THE SOUTHERN FOREST EXPERIMENT STATION. Second Lake States Forest Tree Impr. Conf. Proc. 1955: 33-37. U. S. Forest Serv. Lake States Forest Expt. Sta. Misc. Rpt. 40, 108 pp. SO

Scope, objectives, and results.

——— ANDERSON, D. A., BERCAW, T. E., AND OTHERS.

1951. PROPOSAL FOR A COOPERATIVE STUDY OF GEOGRAPHIC SOURCES OF SOUTHERN PINE SEED. U. S. Forest Serv. South. Forest Expt. Sta., 16 pp. SO

The first document governing the design, establishment, and conduct of what has since become the Southwide Pine Seed Source Study. History of undertaking, commitments involved in participation, objectives, errors to be avoided, hypotheses to be tested and means of testing them, details of design, pertinent literature references, and specifications for seed collection.

——— ANDERSON, D. A., BERCAW, T. E., AND OTHERS.

1951. STANDARDIZED WORKING PLAN FOR LOCAL TESTS OF SEED SOURCE. U. S. Forest Serv. South. Forest Expt. Sta., 11 pp. SO

" . . . Prepared at the request of . . . planters who wish to test forest tree seed from several different geographic sources for suitability in some particular planting locality. [It] is designed to . . . save trouble and get dependable results and . . . insure comparability among tests by different planters."

——— ANDERSON, D. A., BERCAW, T. E., AND OTHERS.

1952. WORKING PLAN FOR COOPERATIVE STUDY OF GEOGRAPHIC SOURCES OF SOUTHERN PINE SEED. U. S. Forest Serv. South. Forest Expt. Sta., 35 pp. SO

Details the execution of the Southwide Pine Seed Source Study up to first distribution of nursery stock in winter of 1952-53. Specifies planting methods, reporting, and early plantation care.

——— ANDERSON, D. A., BERCAW, T. E., AND OTHERS.

1956. SUPPLEMENT NO. 1 TO THE ORIGINAL WORKING PLAN OF SEPTEMBER 12, 1952, FOR THE SOUTHWIDE PINE SEED SOURCE STUDY. U. S. Forest Serv. South. Forest Expt. Sta., 110 pp. SO

Information furnished to cooperating nurserymen and planters, and confirmed or corrected by them, through the establishment from 1952 until 1954 of certain initial series of longleaf, slash, loblolly, and shortleaf plantations in 16 States. Largely tabular, but with 13 pages of additions to or amendments of the 1952 plan.

———ZOBEL, B. J., GODDARD, R. E., AND OTHERS.

1960. MINIMUM STANDARDS FOR PROGENY-TESTING SOUTHERN FOREST TREES FOR SEED-CERTIFICATION PURPOSES. U. S. Forest Serv. South. Forest Expt. Sta., 19 pp. SO

Twenty-one standards, with explanatory text, specifying the plant material, experimental design, field techniques, records, statistical analyses, and reporting proposed by a special Subcommittee of the Committee on Southern Forest Tree Improvement as the minimum basis for certifying genetic improvement of forest tree seed.

WENGER, K. F.

1953. THE EFFECT OF FERTILIZATION AND INJURY ON THE CONE AND SEED PRODUCTION OF LOBLOLLY PINE SEED TREES. Jour. Forestry 51: 570-573. SE

Application of fertilizer at the rate of 25 and 50 pounds per tree significantly increased cone production of 25-year-old loblolly pines. Forty-year-old trees did not respond. Half-girdling with a knife produced no increase in cone crop. Treatments did not significantly affect percentage of defective cones, number of seeds per cone, or percentage of defective seed per cone.

WHEELER, P. R.

1959. SPECIFIC GRAVITY VARIATION IN MISSISSIPPI PINES. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 87-96. SO

Of the single variables tested to predict core specific gravity, the most important was the reciprocal of age. It was also found that the four southern pines show true variation in core specific gravity according to geographic location.

WRIGHT, J. W., BINGHAM, R. T., and DORMAN, K. W.

1958. GENETIC VARIATION WITHIN GEOGRAPHIC ECOTYPES OF FOREST TREES AND ITS ROLE IN TREE IMPROVEMENT. Jour. Forestry 56: 803-808. SE

Review of philosophy and results of work in individual tree variation and its utilization in establishing seed orchards.

ZAHNER, R.

1956. GENETICALLY SIMILAR SEEDLINGS FOR PHYSIOLOGY EXPERIMENTS. Jour. Forestry 54: 190. SO

Seedlings of different ancestry may respond differently to treatment, and may thus introduce error into otherwise carefully controlled experiments.

ZAK, B.

1953. DEVELOPING LITTLELEAF-RESISTANT SHORTLEAF PINE. South. Lumberman 187(2345): 147-149. SE

Healthy and vigorous individual trees have been found surrounded by dead and dying trees. Potted seedlings show variable susceptibility to fungus attack when inoculated. Open-pollinated seed has been collected from apparently healthy trees. Also, these trees have been cross-pollinated. Seed from more than a dozen localities over the range of shortleaf pine has been planted on severe littleleaf areas in Virginia, South Carolina, and Georgia in a test of racial variation in disease resistance. A number of selected trees have been propagated by grafting. A method of testing potted seedlings against Phytophthora cinnamomi *within 2 years has been developed; also, a shorter method using seedlings growing in liquid solutions.*

1953. ROOTING AND GRAFTING IN A FOREST TREE IMPROVEMENT PROGRAM. Second South. Forest Tree Impr. Conf. Proc. 1953, 8 pp. SE

Techniques and relative feasibility and costs of rooting and grafting various southern pines.

1955. GRAFTING TECHNIQUES USED IN PROPAGATING SPECIES OF PINE IN THE SOUTHEAST FOR EXPERIMENTAL AND SEED ORCHARD USE. Third South. Forest Tree Impr. Conf. Proc. 1955: 83-88. SE

Purposes, possibilities, treatments tested, and results attained to date.

1955. INHERITANCE OF RESISTANCE TO LITTLELEAF IN SHORTLEAF PINES. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 88, 2 pp. SE

In growth and resistance to Phytophthora root rot, open-pollinated progeny from littleleaf trees were inferior to open-pollinated progeny from associated healthy trees.

1955. THE GRAFTING OF SHORTLEAF AND OTHER PINE SPECIES. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 59, 13 pp. SE

Describes the use of cleft, bottle, side, veneer, and "soft-tissue" grafts, both indoors and out. Factors affecting the success of grafting are discussed. Soft-tissue grafts were especially successful, both intraspecific and interspecific, and are recommended wherever feasible.

1956. EXPERIMENTAL AIR-LAYERING OF SHORTLEAF AND LOBLOLLY PINE. U. S. Forest Serv. Southeast. Forest Expt. Sta. Sta. Paper 69, 12 pp. SE

Methods of air-layering stems and needle fascicles to obtain rooted cuttings.

1956. SEED ORCHARDS. Forest Farmer 15(12): 8-9, 16-17. SE

Factors to be considered in the establishment of seed orchards, and the advantages to be gained from seed orchards.

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1957. RESISTANCE TO LITTLELEAF IN SHORTLEAF PINE. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 41-43. SE

Shortleaf pines on severe littleleaf sites are propagated by seeds and grafts for tests of resistance to Phytophthora cinnamomi.

——— and McALPINE, R. G.

1957. ROOTING OF SHORTLEAF AND SLASH PINE NEEDLE BUNDLES. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 112, 2 pp. SE

Needle bundles treated with indolebutyric acid were rooted in a 50-50 mixture of sand and peat moss.

ZOBEL, B., DORMAN, K. W., PERRY T., AND OTHERS.

1954. THE ROLE OF GENETICS IN SOUTHERN FOREST MANAGEMENT. Forest Farmer 14(1): 4-6, 14-15; 14(2): 8-9, 14-19; 14(3): 8-9, 14-15. SE

I.—Environment is the most important factor in tree development only within definite genetic limits. II.—Seed collection for forest nurseries must be from the most favorable geographic origin. III.—In preserving seed trees, select superior individuals insofar as possible.

——— BARBER, J., BROWN, C. L., and PERRY, T. O.

1958. SEED ORCHARDS—THEIR CONCEPT AND MANAGEMENT. Jour. Forestry 56: 815-825. SE

Pertinent information on American seed orchards: their objectives, establishment, and care.

INDEX OF JUNIOR AUTHORS

For	*See*
Allen, R. M.	Goddard, R. E.; McGregor, W. H. D.
Anderson, D. A.	Wakeley, P. C.
Arline, L.	Johansen, R. W.
Barber, J. C.	Dorman, K. W.; Evans, T. C.; VanHaverbeke, D. F.; Zobel, B.
Bauer, E.	Dorman, K. W.; Greene, J. T.
Beers, W. L.	Merkel, E. P.
Bengtson, G. W.	Squillace, A. E.
Bercaw, T. E.	Henry, B. W.; Wakeley, P. C.
Bingham, R. T.	Wright, T. W.
Bonner, F. T.	McKnight, J. S.
Bowden, A. B.	Echols, R. M.
Brown, C. L.	Zobel, B.
Campbell, T. E.	Wakeley, P. C.
Cech, F. C.	Nienstaedt, H.
Cossitt, F. M.	Wakeley, P. C.
Coyne, J. F.	Allen, R. M.; Henry, B. W.
Crow, A. B.	McLemore, B. F.
Darby, S. P.	Barber, J. C.
Dell, T. R.	Derr, H. J.
Dorman, K. W.	Barber, J. C.; Greene, J. T.; Hargreaves, L. A., Jr.; Kormanik, P. P.; Little, E. L., Jr.; Mitchell, H. L.; Snow, A. G., Jr.; Squillace, A. E.; Wright, J. W.; Zobel, B.
Echols, R. M.	Mergen, F.
Enghardt, H.	Derr, H. J.
Evans, T. C.	Schopmeyer, C. S.
Fassnacht, D. L.	Wahlgren, H. E.
Goddard, R. E.	Wakeley, P. C.
Greene, J. T.	Dorman, K. W.
Grigsby, H. C.	Snyder, E. B.
Haney, G. P.	Kormanik, P. P.
Henry, B. W.	Jewell, F. F.; Wakeley, P. C.
Hepting, G. H.	Henry, B. W.; Toole, E. R.
Hidalgo, J. U.	Snyder, E. B.
Hoekstra, P. E.	Mergen, F.; Merkel, E. P.
Jackson, L. W. R.	McAlpine, R. G.
Jewell, F. F.	Neelands, R. W.
Johansen, R. W.	Hoekstra, P. E.
Jordan, R. A.	Barber, J. C.
Kramer, P. J .	McGregor, W. H. D.
Kraus, J. F.	Johansen, R. W.; Squillace, A. E.
McAlpine, R. G.	Reines, M.; Zak, B.
McComb, A. L.	Allen, R. M.
McLintock, T. F.	Matthews, F. R.
Martindale, D. L.	Nelson, T. C.
Mergen, F.	Echols, R. M.; Hoekstra, P. E.; Nienstaedt, H.; Pomeroy, K. B.; Schopmeyer, C. S.; Smith, R. H.
Miller, J. M.	Clapper, R. B.
Naylor, A. W.	Allen, R. M.
Ostrom, C. E.	Committee on South. Forest Tree Impr.
Perry, T. O.	Zobel, B.
Pomeroy, K. B.	Mergen, F.; Snyder, E. B.
Reines, M.	Barber, J. C.
Rossoll, H.	Mergen, F.; Snyder, E. B.
Roth, E. R.	Bethune, P. F.
Russell, T. E.	Mann, W. F., Jr.
Scarbrough, N. M.	Allen, R. M.
Schopmeyer, C. S.	Bourdeau, P. F.; Dorman, K. W.; Mitchell, H. L.; Snow, A. G., Jr.
Smith, J. L.	Bower, D. R.
Snow, A. G., Jr.	Dorman, K. W.
Snyder, E. B.	Duffield, J. W.; Hesseltine, C. W.
Squillace, A. E.	Evans, T. C.
Stewart, D. M.	Barber, J. C.
Thomas, L. T.	Kraus, J. F.
Toole, E. R.	Hepting, G. H.
VanHaverbeke, D. F.	Barber, J. C.
Wakeley, P. C.	Campbell, T. E.; McLemore, B. F.
Wheeler, P. R.	Mitchell, H. L.
Zak, B.	Jackson, L. W. R.
Zobel, B. J.	Barber, J. C.; Wakeley, P. C.